

Figure 1

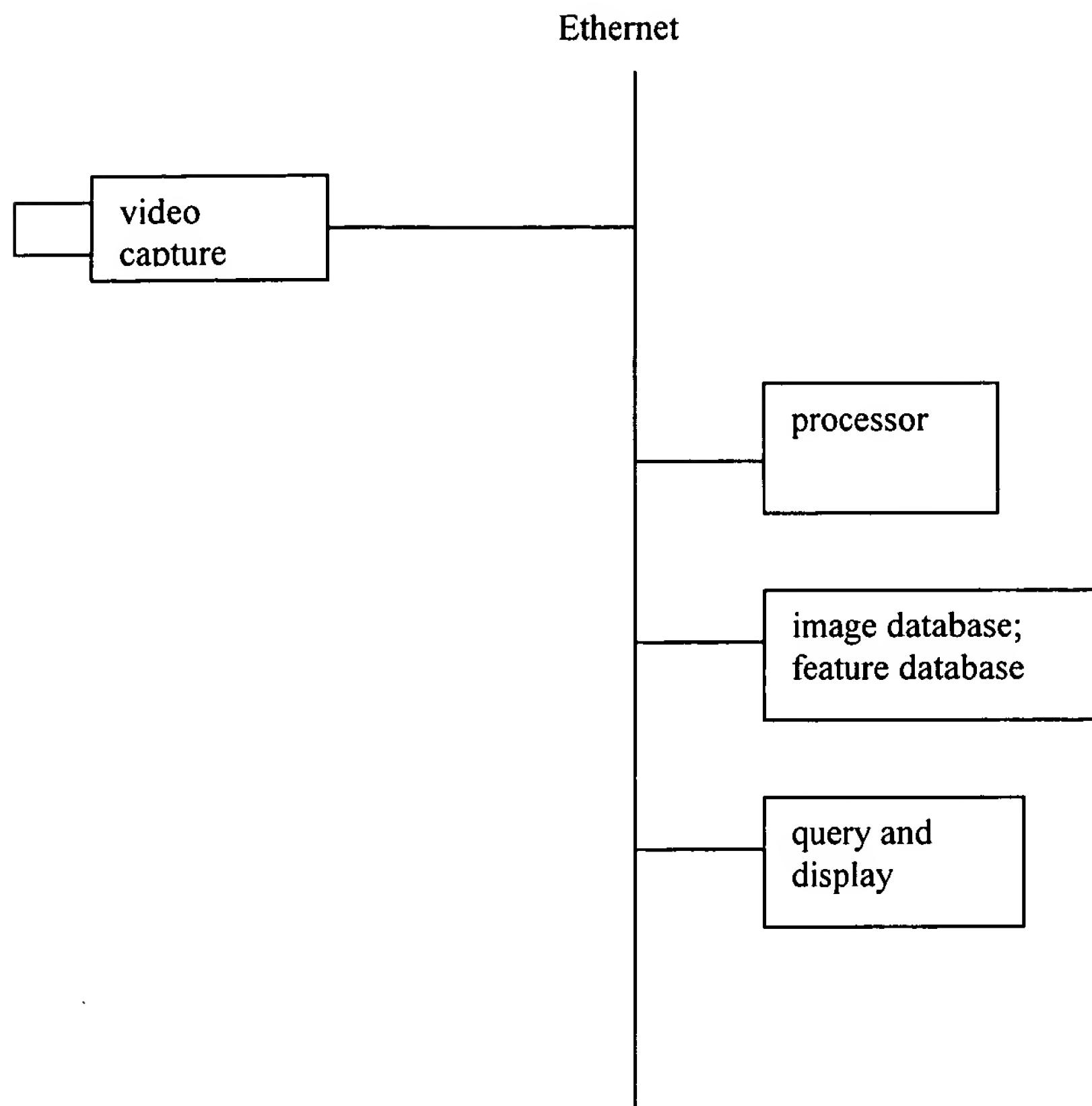


Figure 2

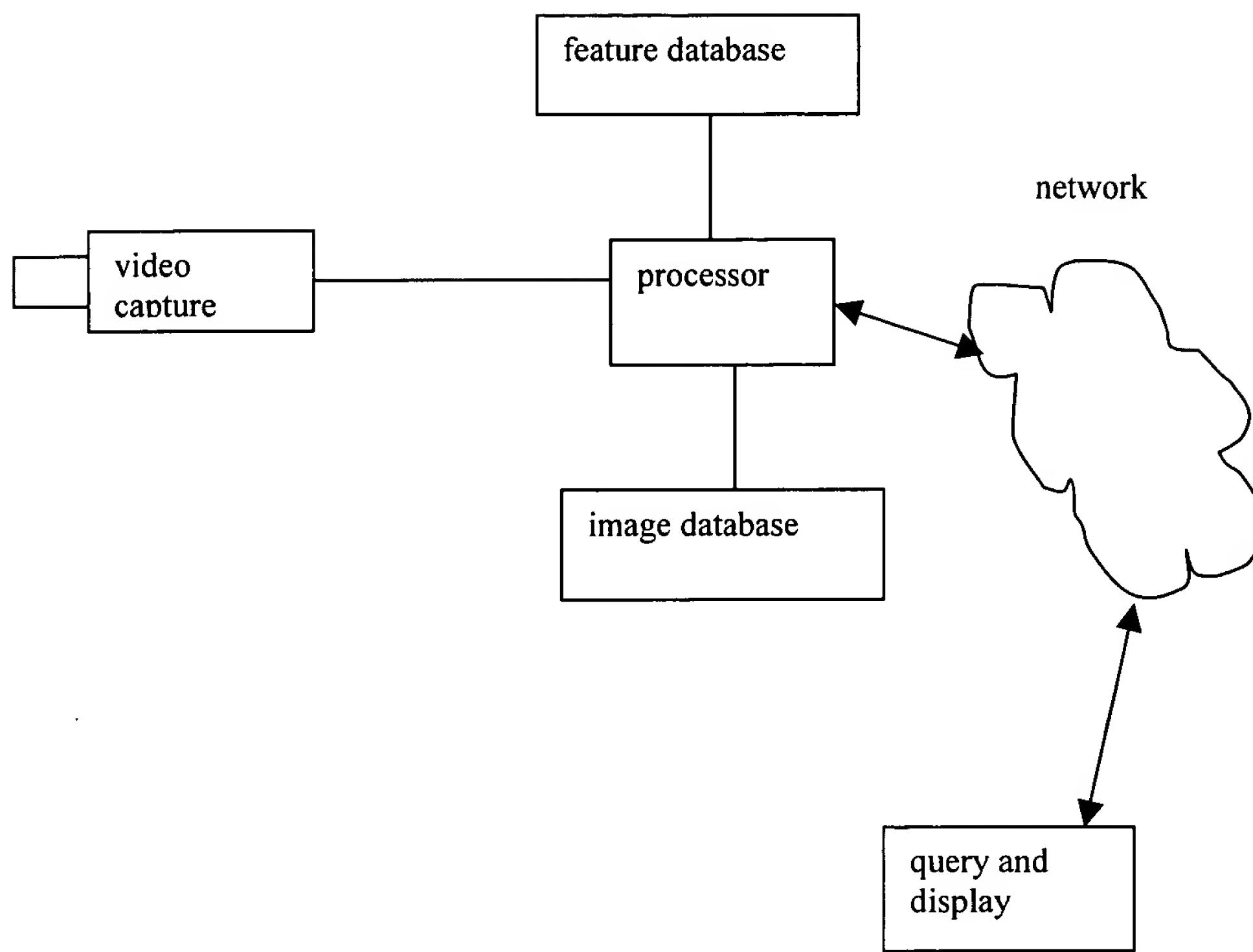


Figure 3

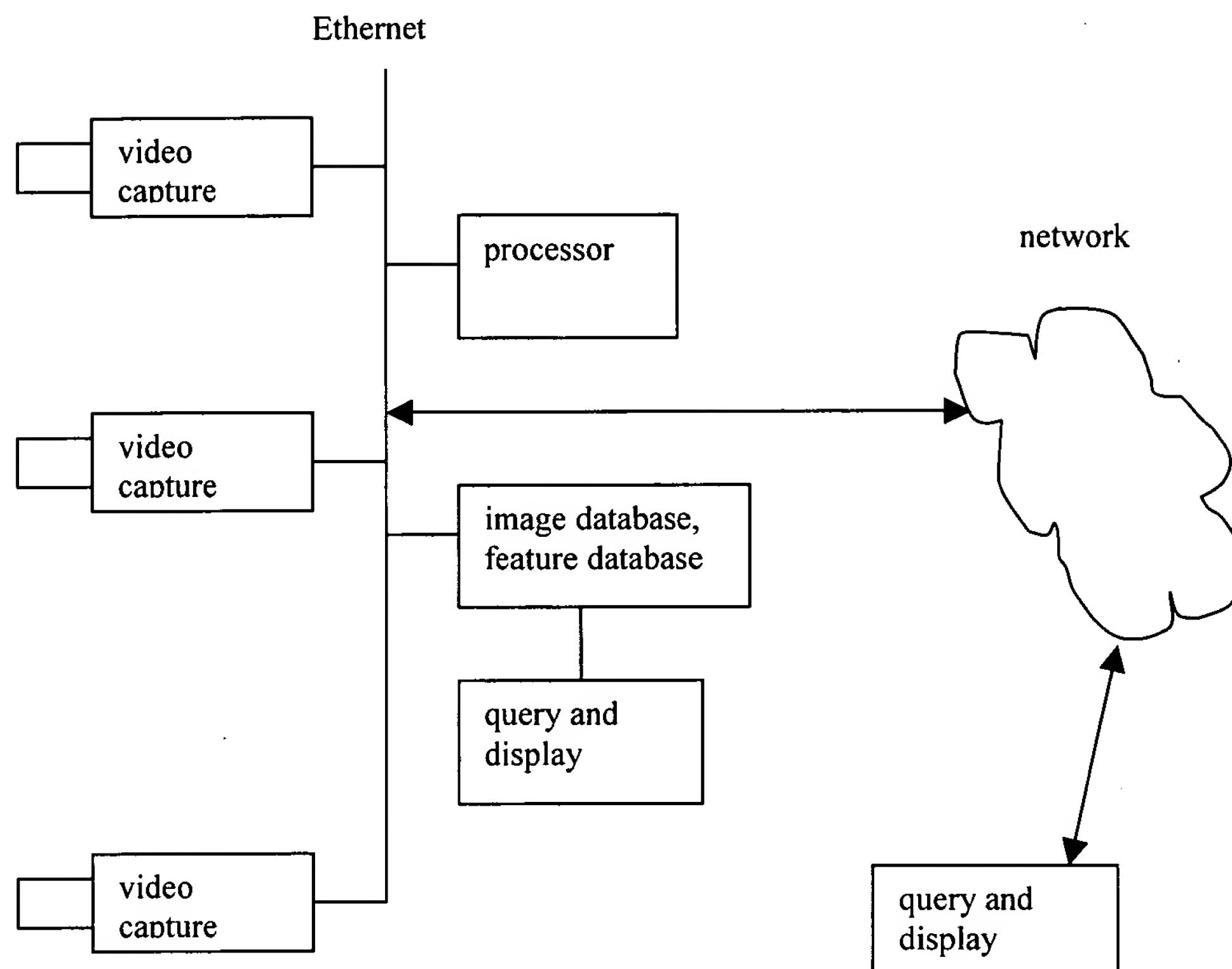
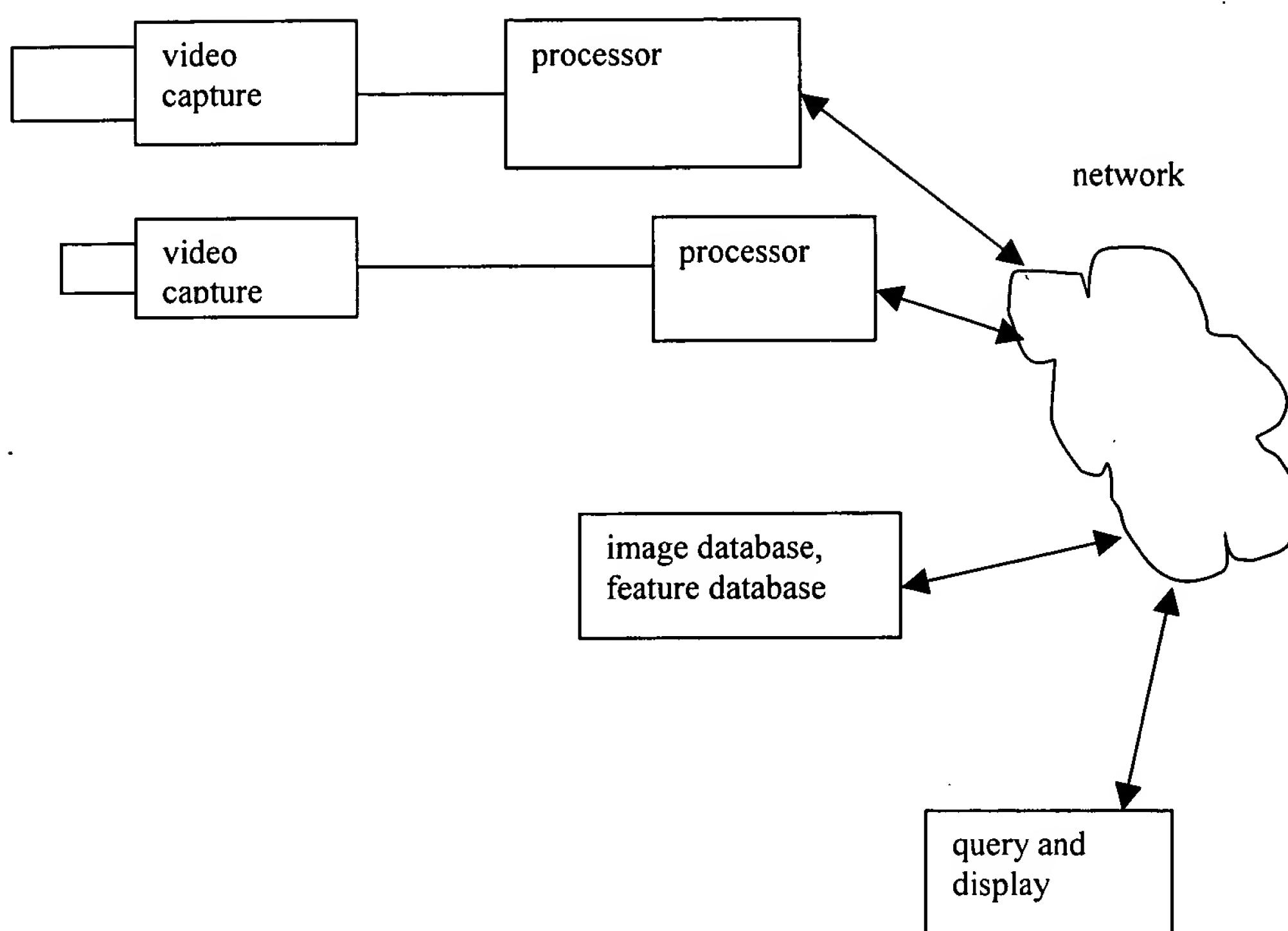
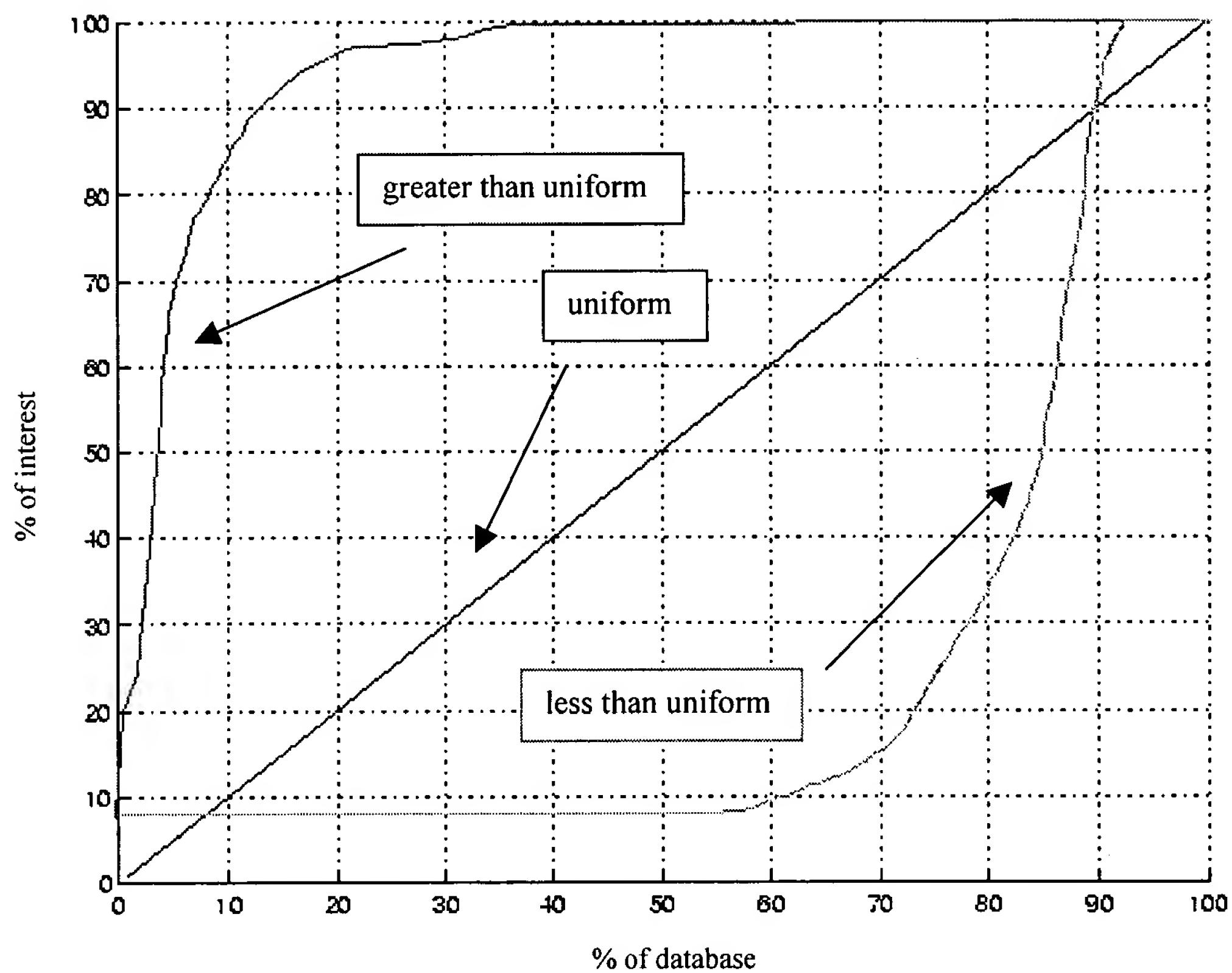


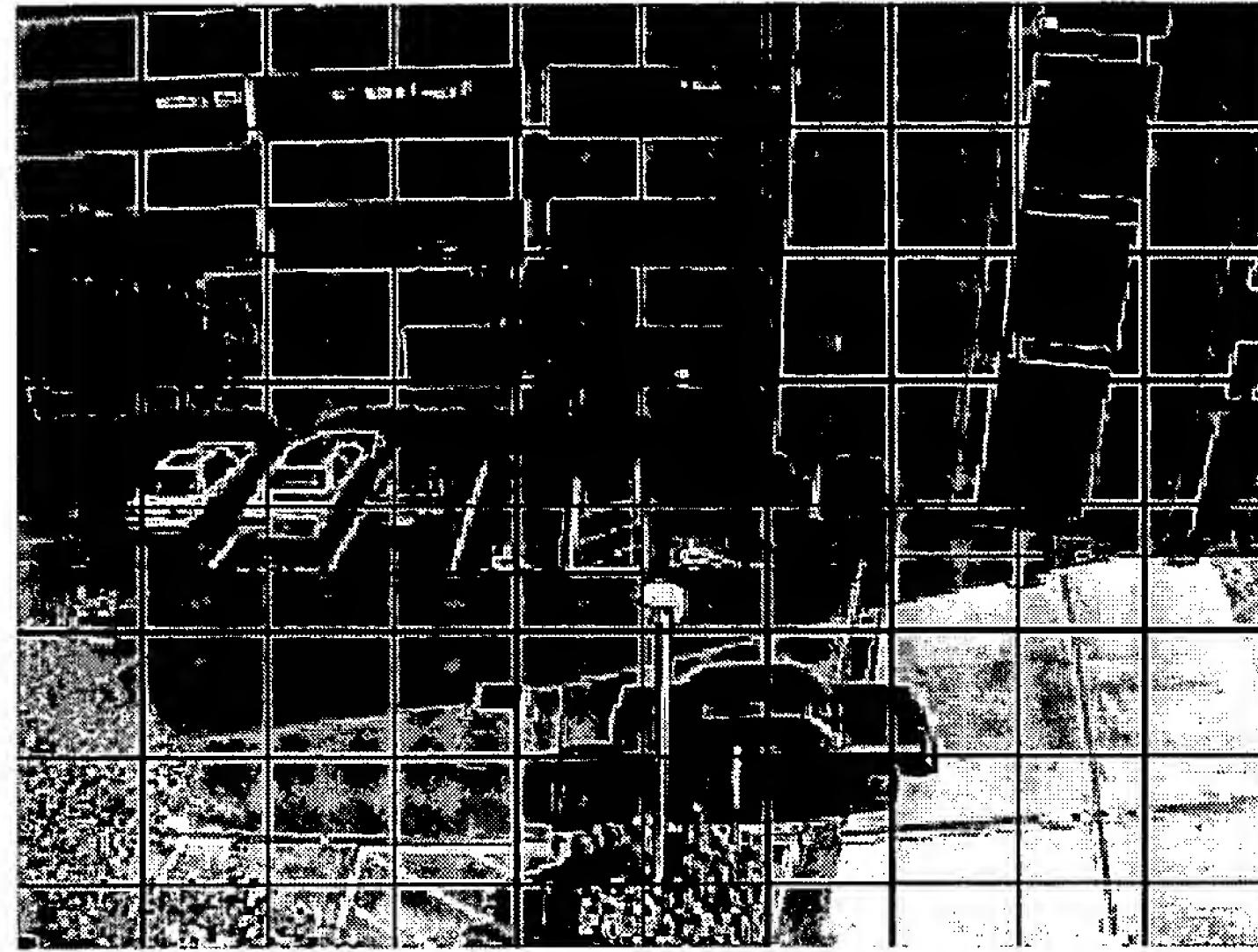
Figure 4



Figures 5-35



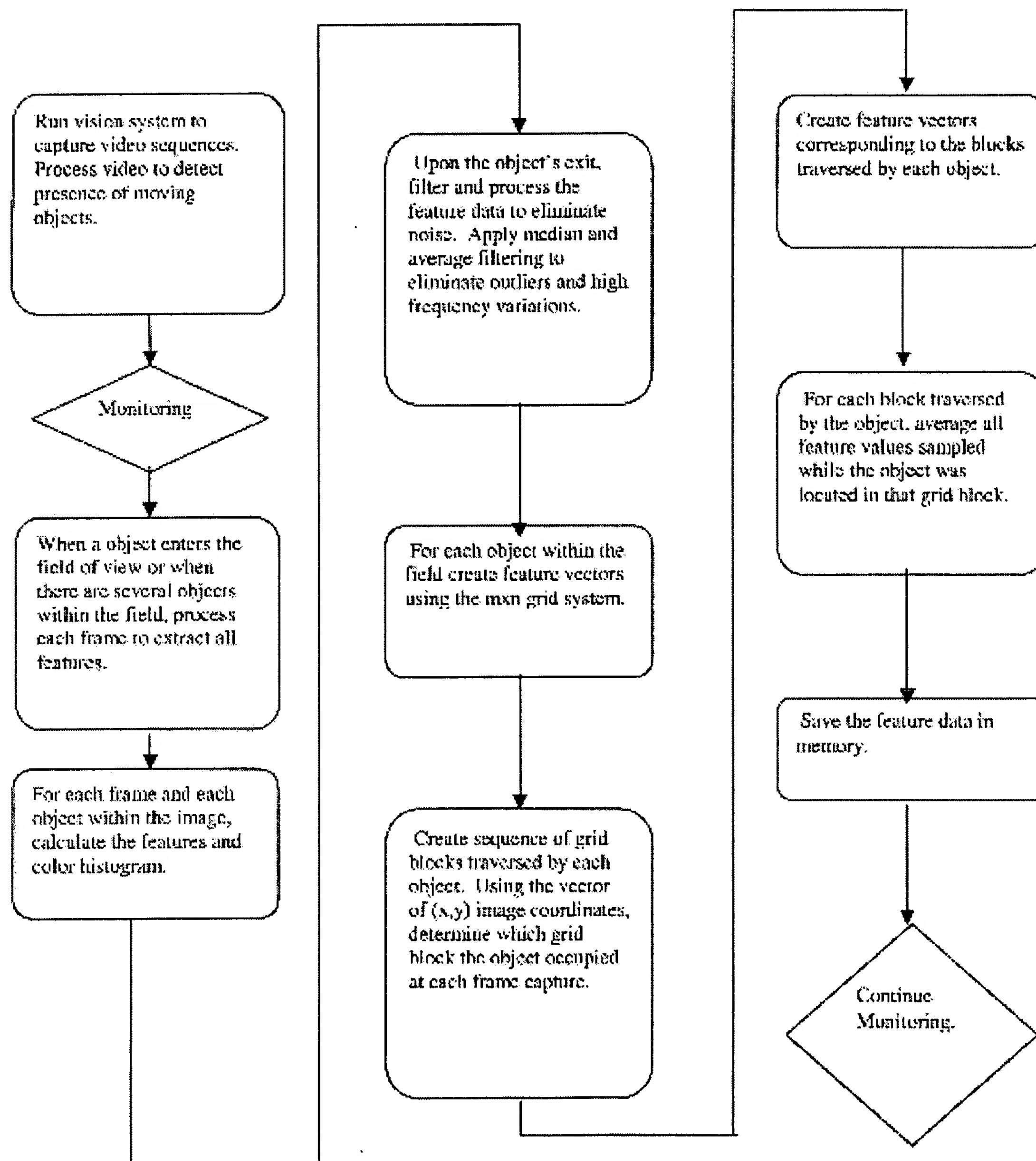
**Figure 5:** Efficiency plotted for three scenarios, better than random, random, and worse than random.



**Figure 6:** Vehicle traversing the field of view. The  $m \times n = 10 \times 8$  grid partitions the image into 80 30x32 pixel grid blocks.



**Figure 7:** A person traversing the field of view. The  $m \times n = 20 \times 15$  grid partitions the image into 300 16x16 pixel grid blocks.



**Figure 8: Feature generation software flow chart.**

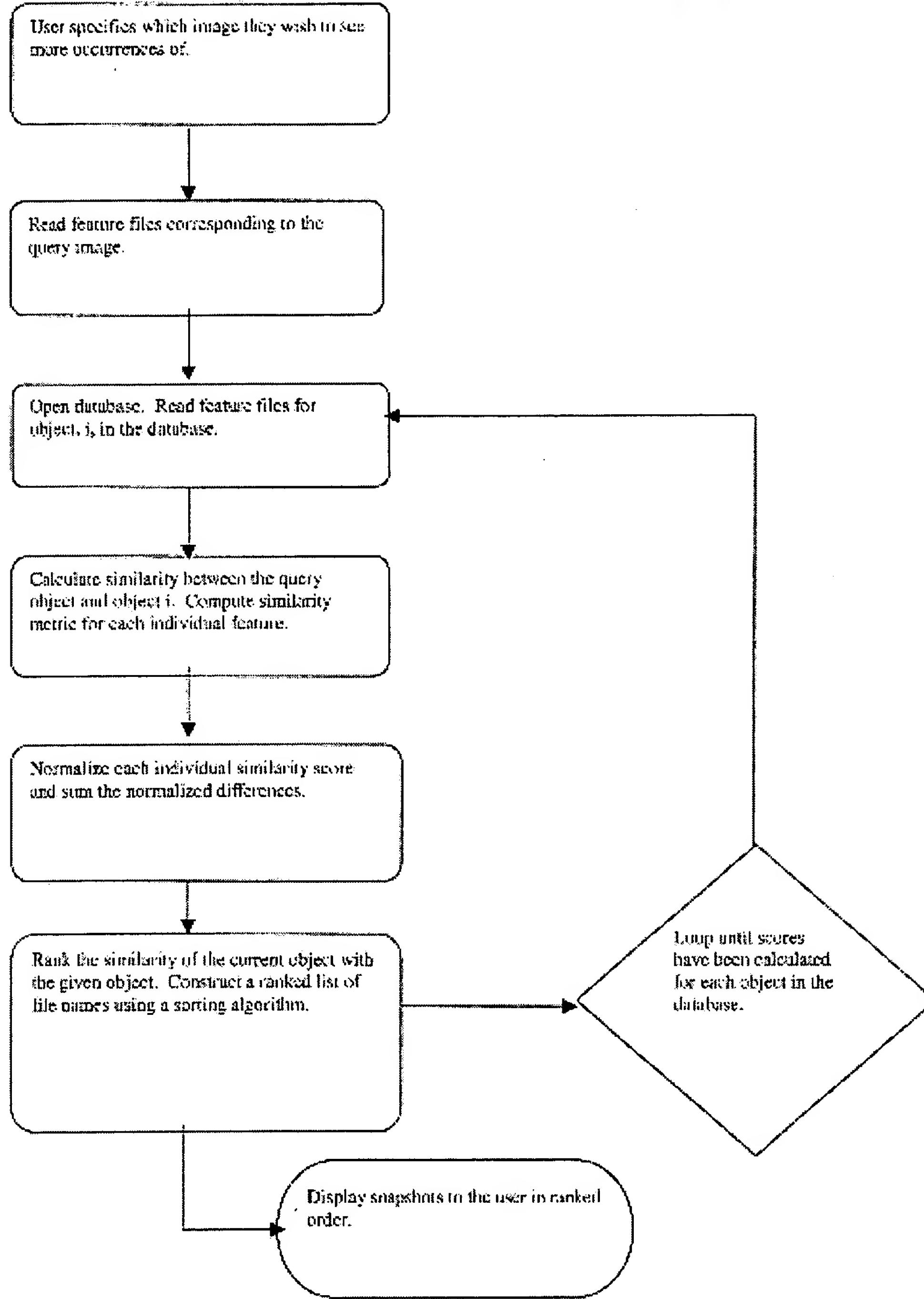
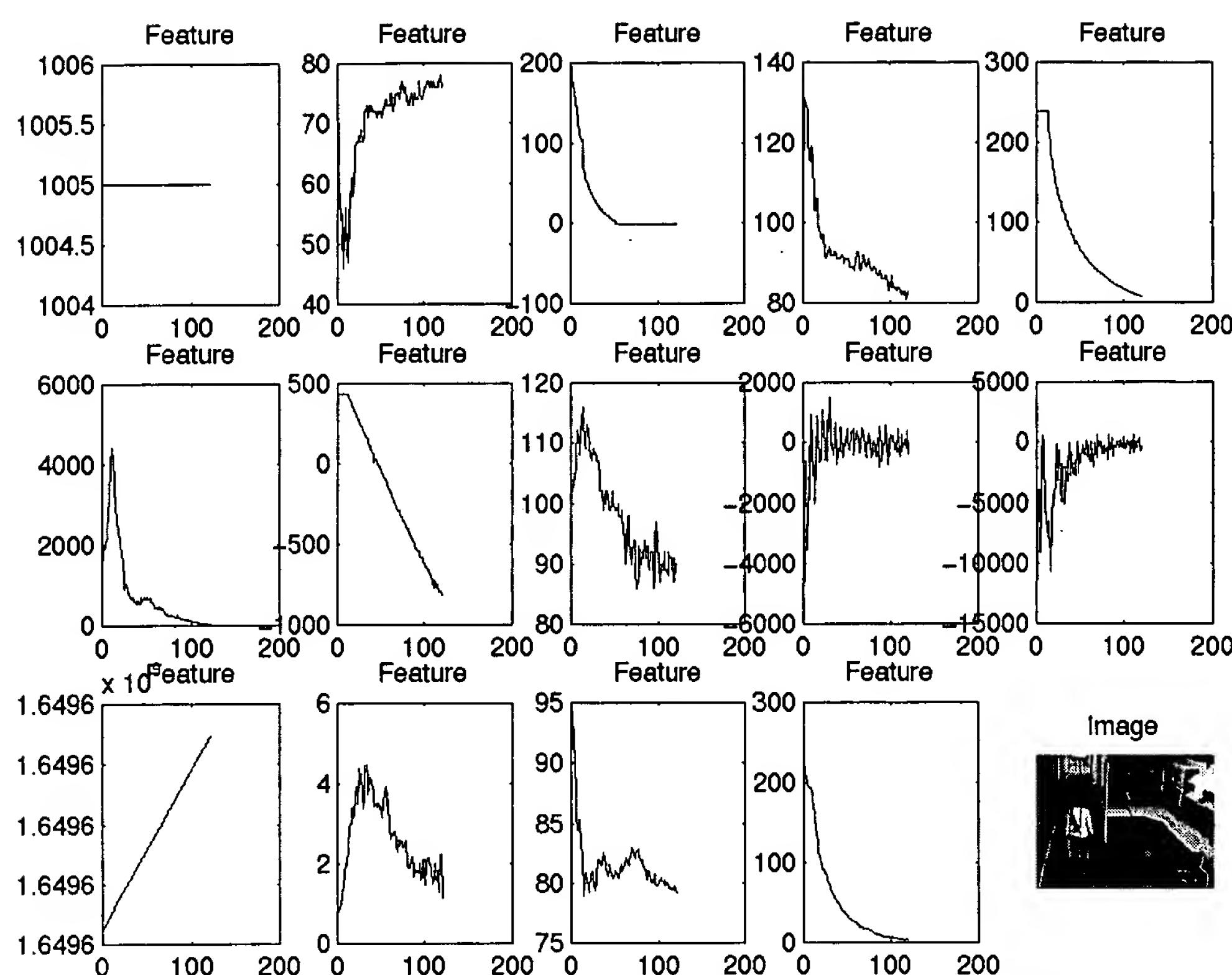
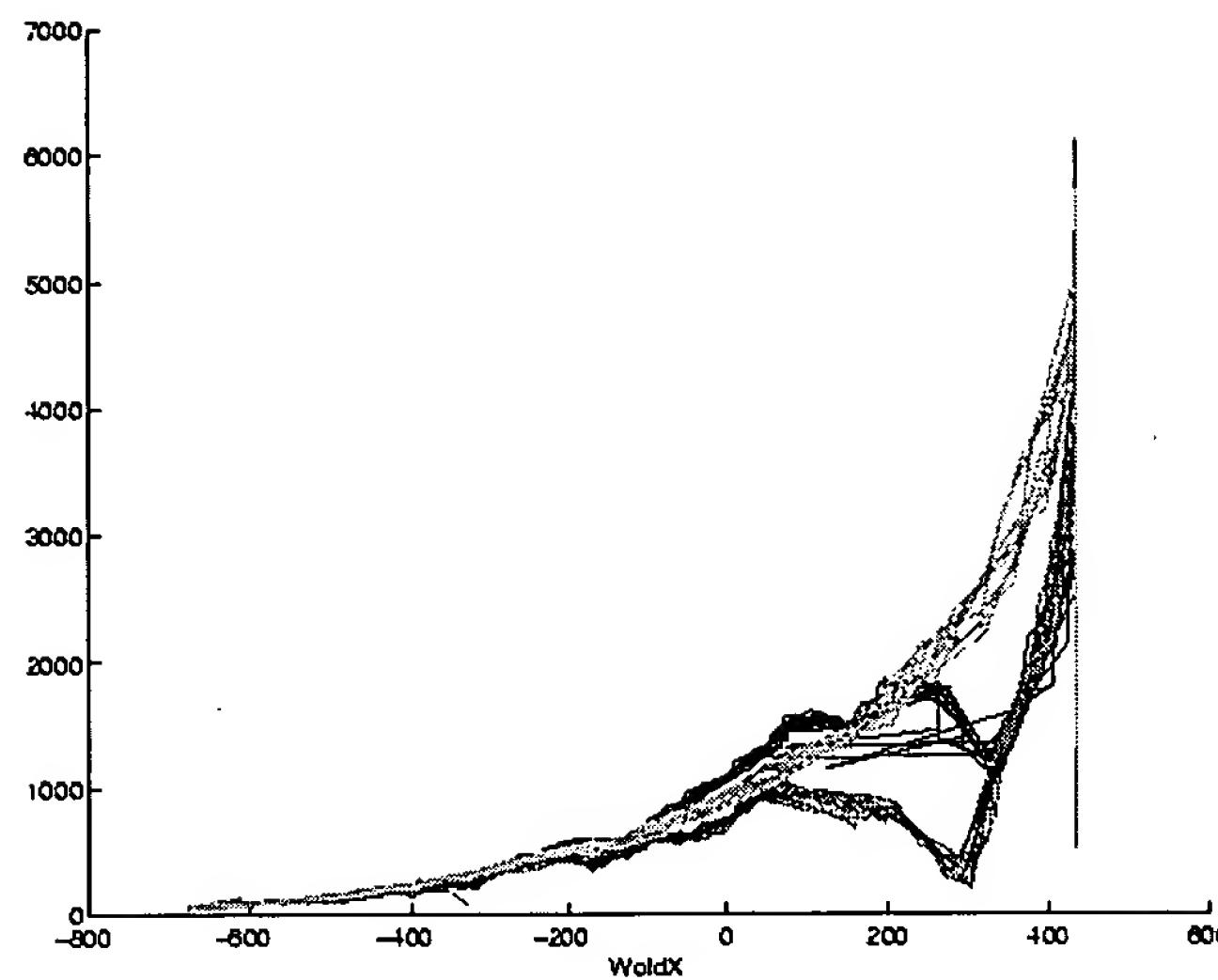


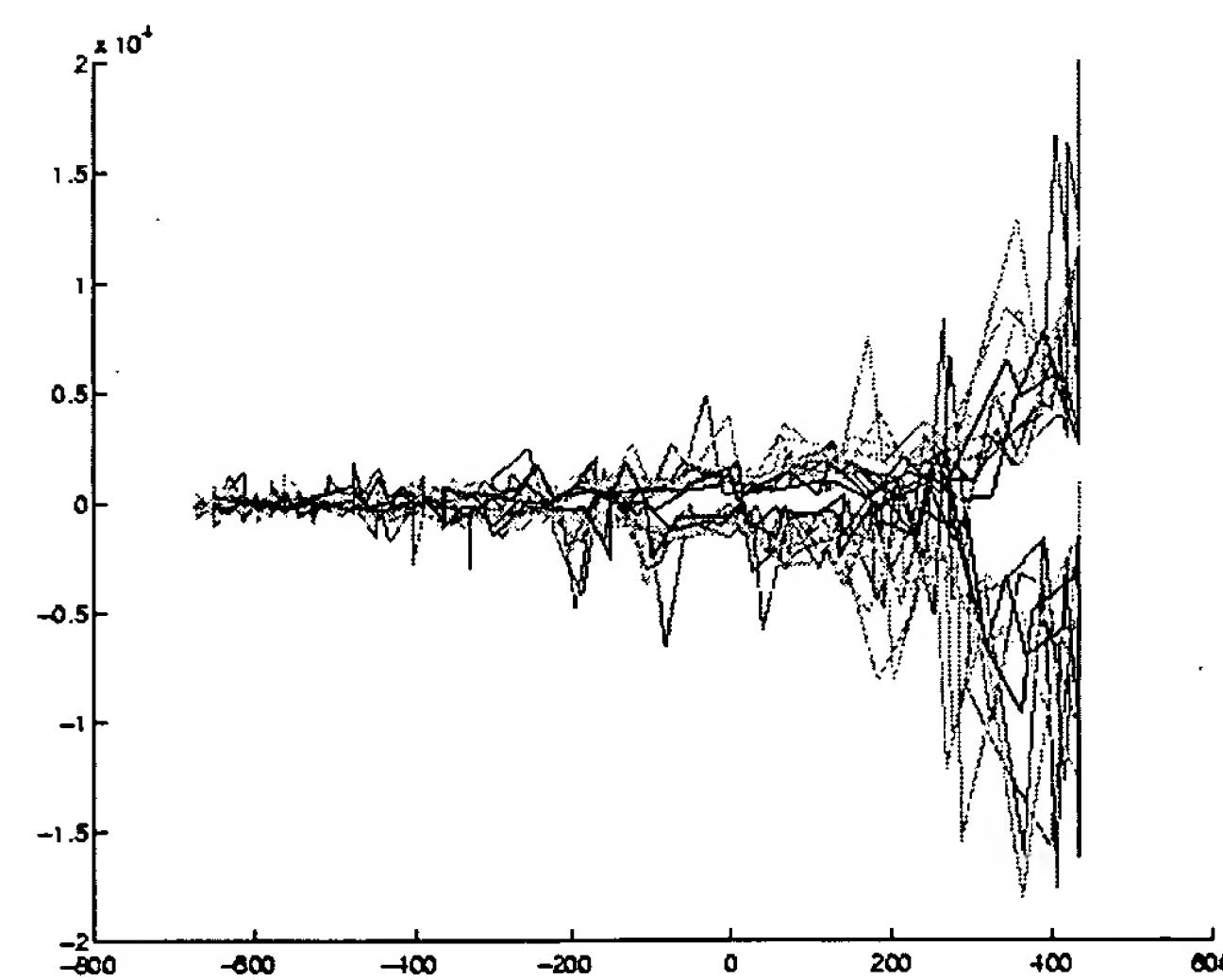
Figure 9: Image indexing software flow chart.



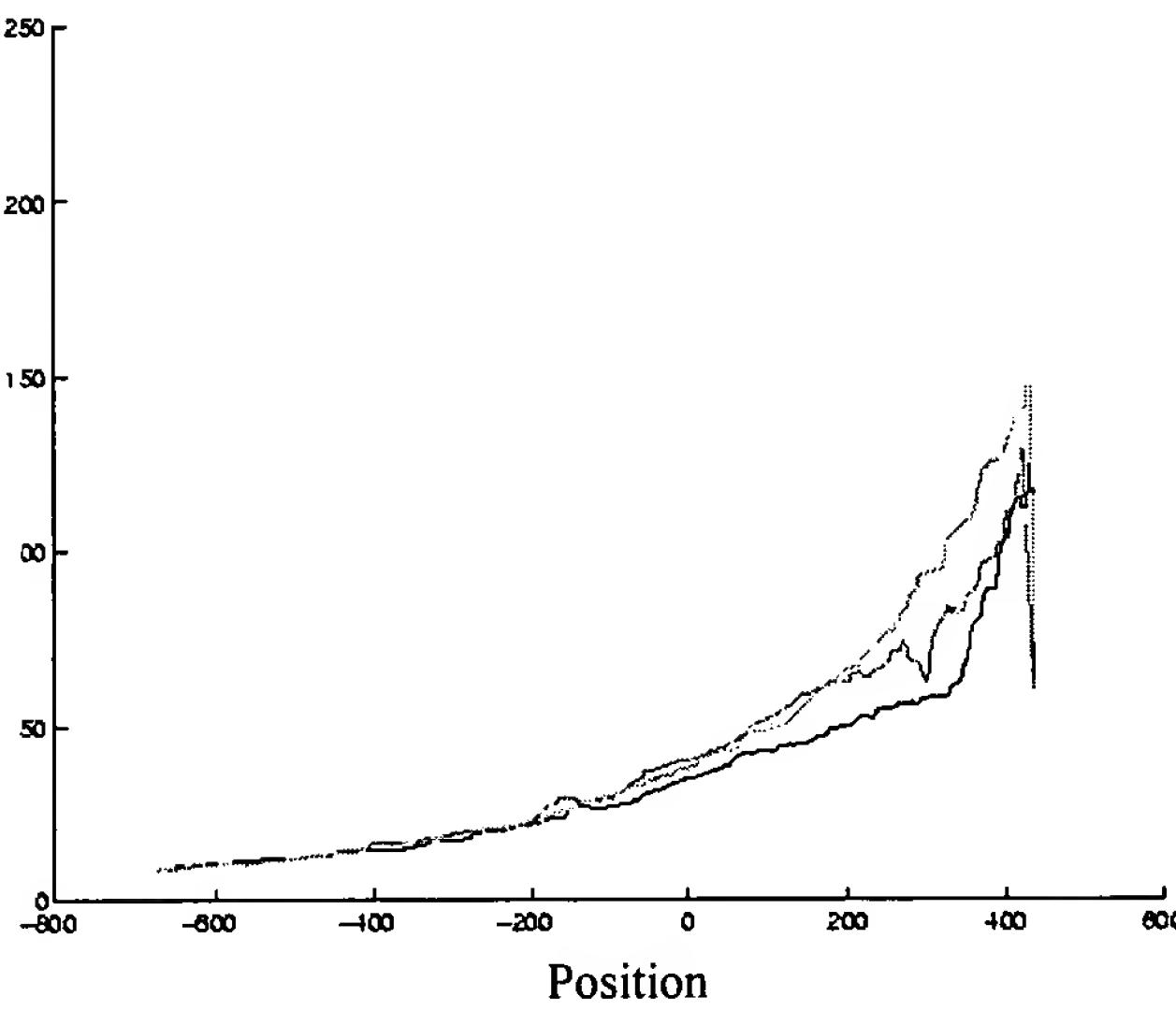
**Figure 10 Feature plots verses position relative to the camera. The plots show features that do and do not depend on the object's position.**



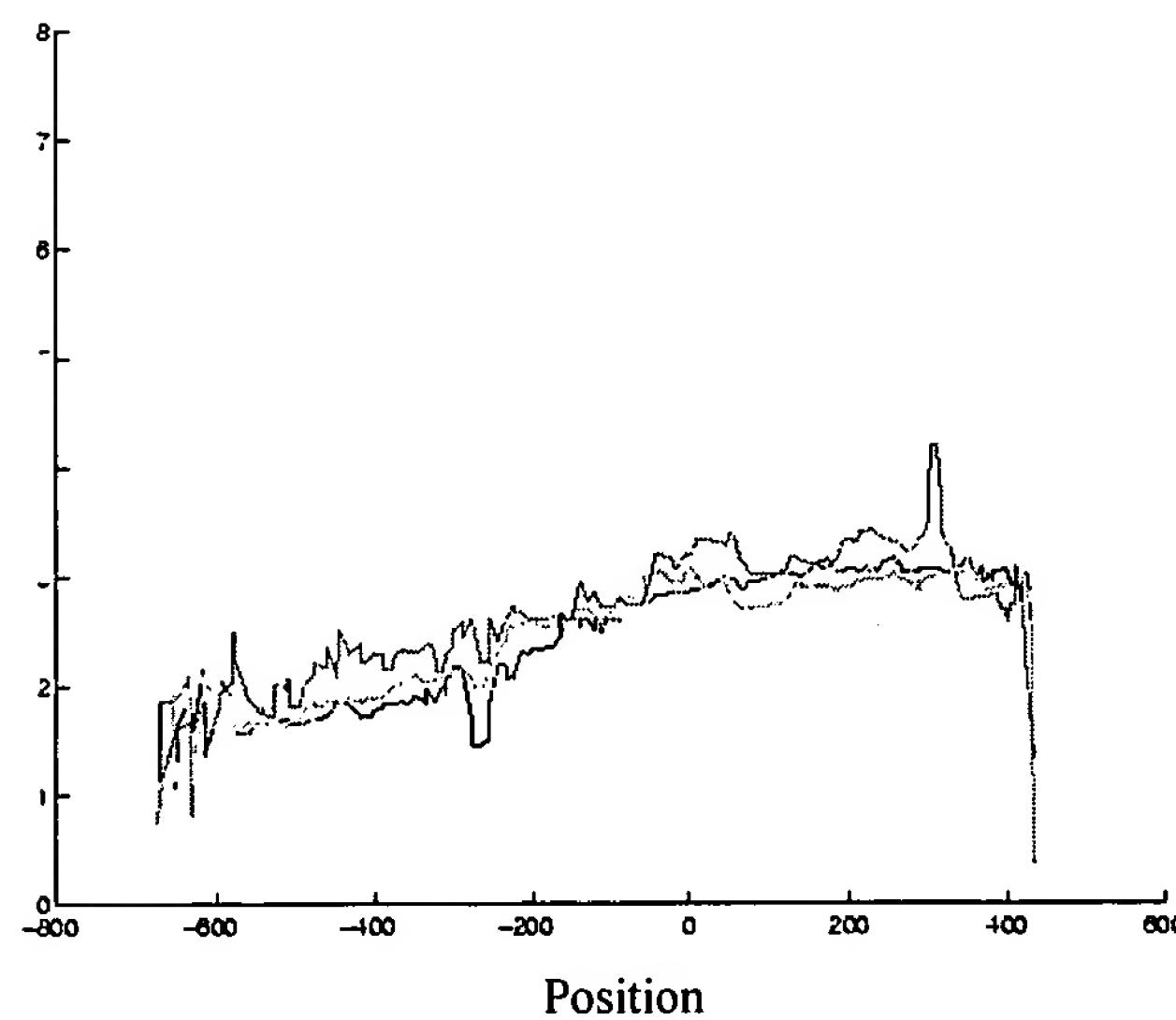
**Figure 11 Feature5 verses position from camera. Each color represents a different individual.**



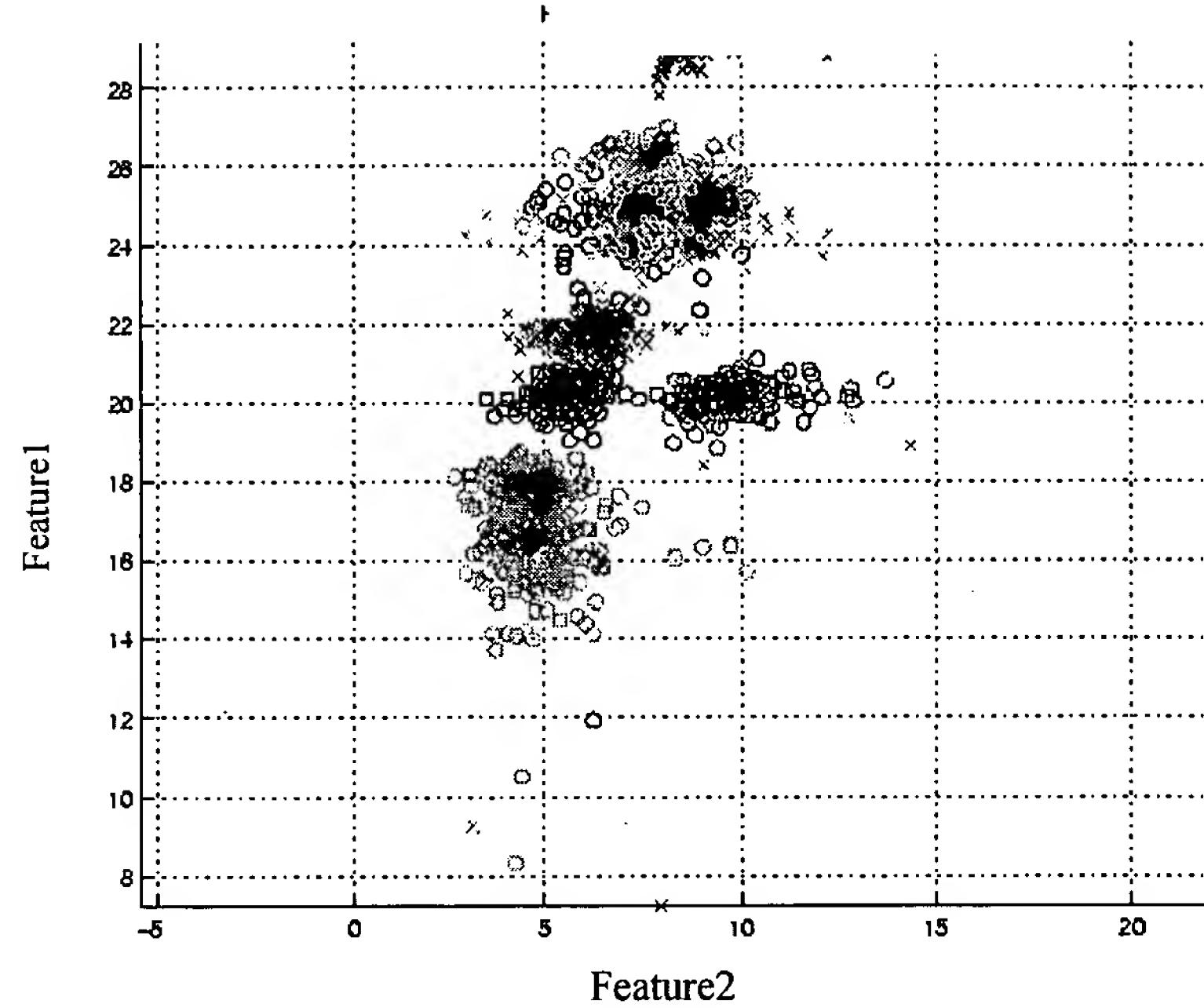
**Figure 12 Feature3 verses position from camera. Each color represents a different individual.**



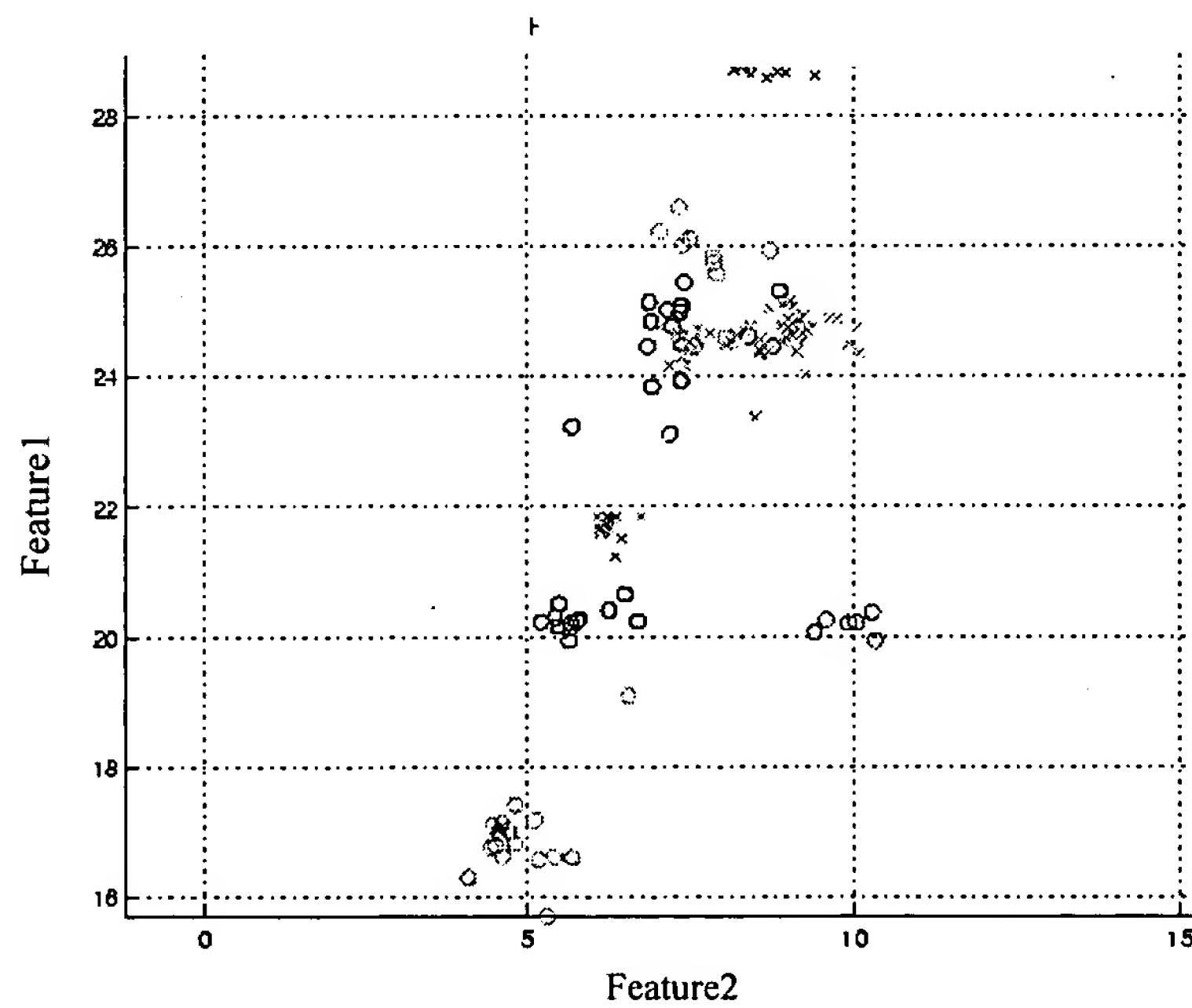
**Figure 13** Feature5 verses position from camera for three objects. The curves in this plot result from applying a median and average filter to the data. Each color, except yellow, represents a different individual. The yellow curves represent the processed signal.



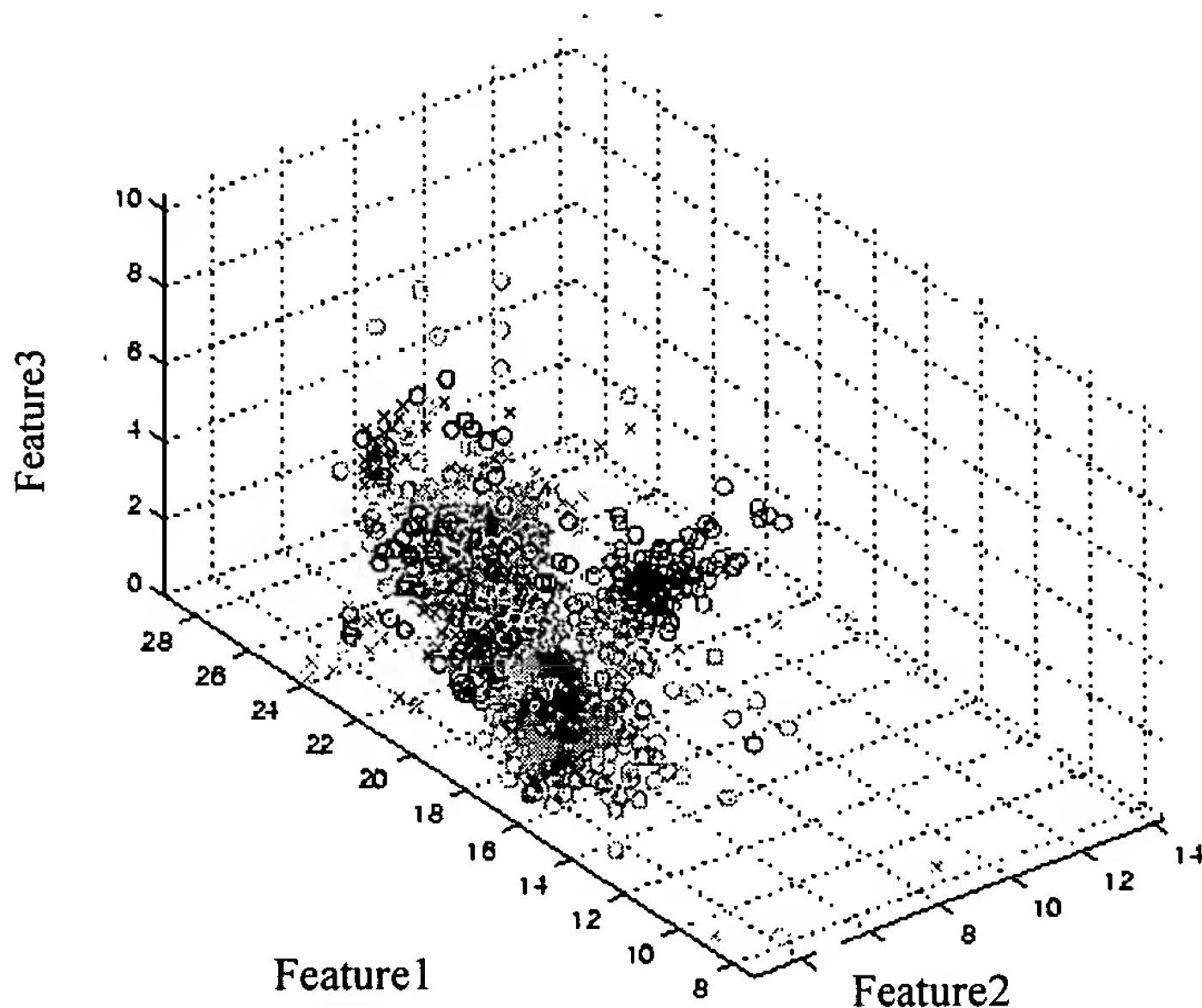
**Figure 14** Feature3 verses position from camera. The curves in this plot result from applying a median and average filter to the data. Each color, except yellow, represents a different individual. The yellow curves represent the processed signal.



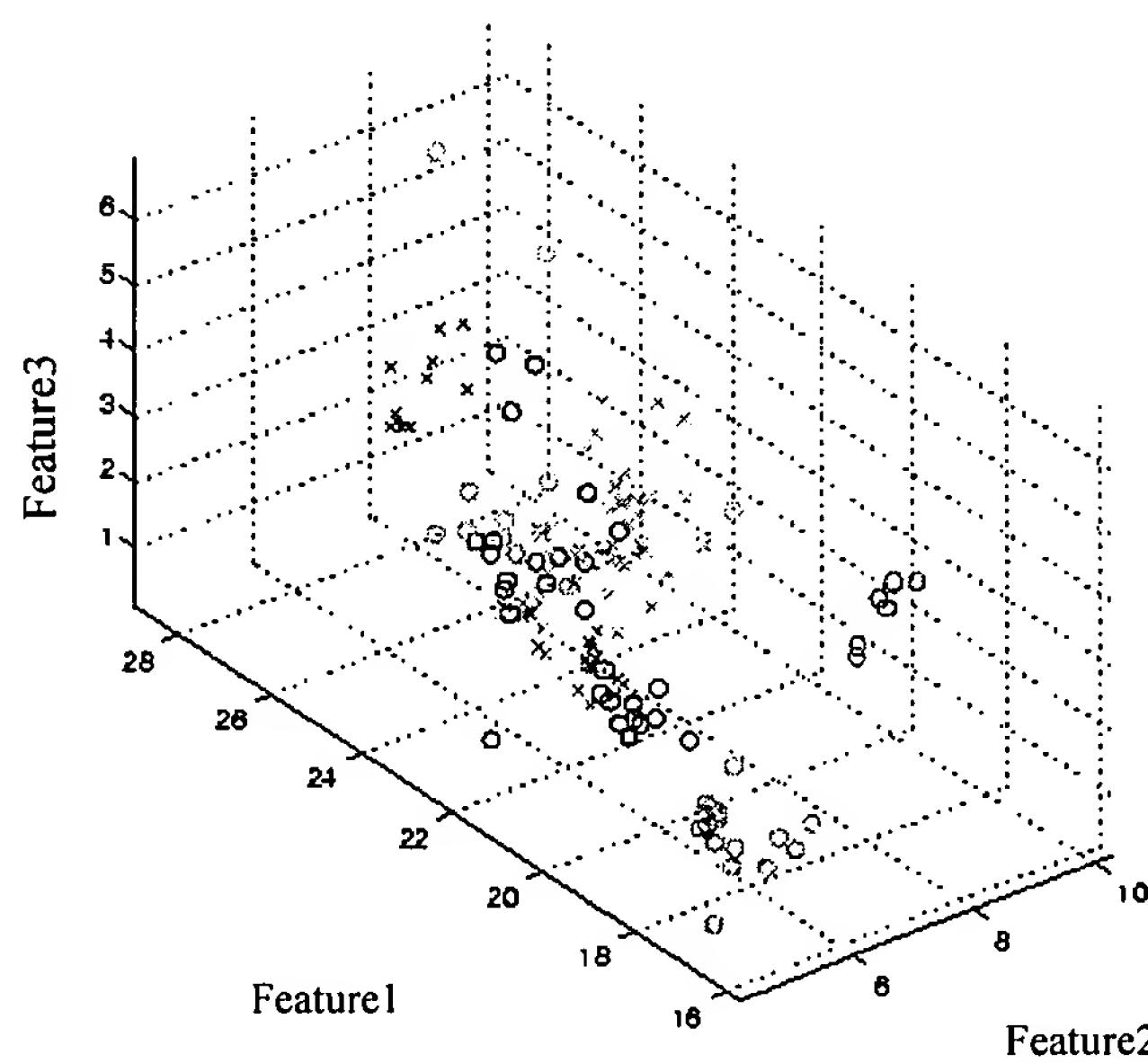
**Figure 15:** Feature1 and Feature2 clusters created by plotting every valid value extracted from each frame



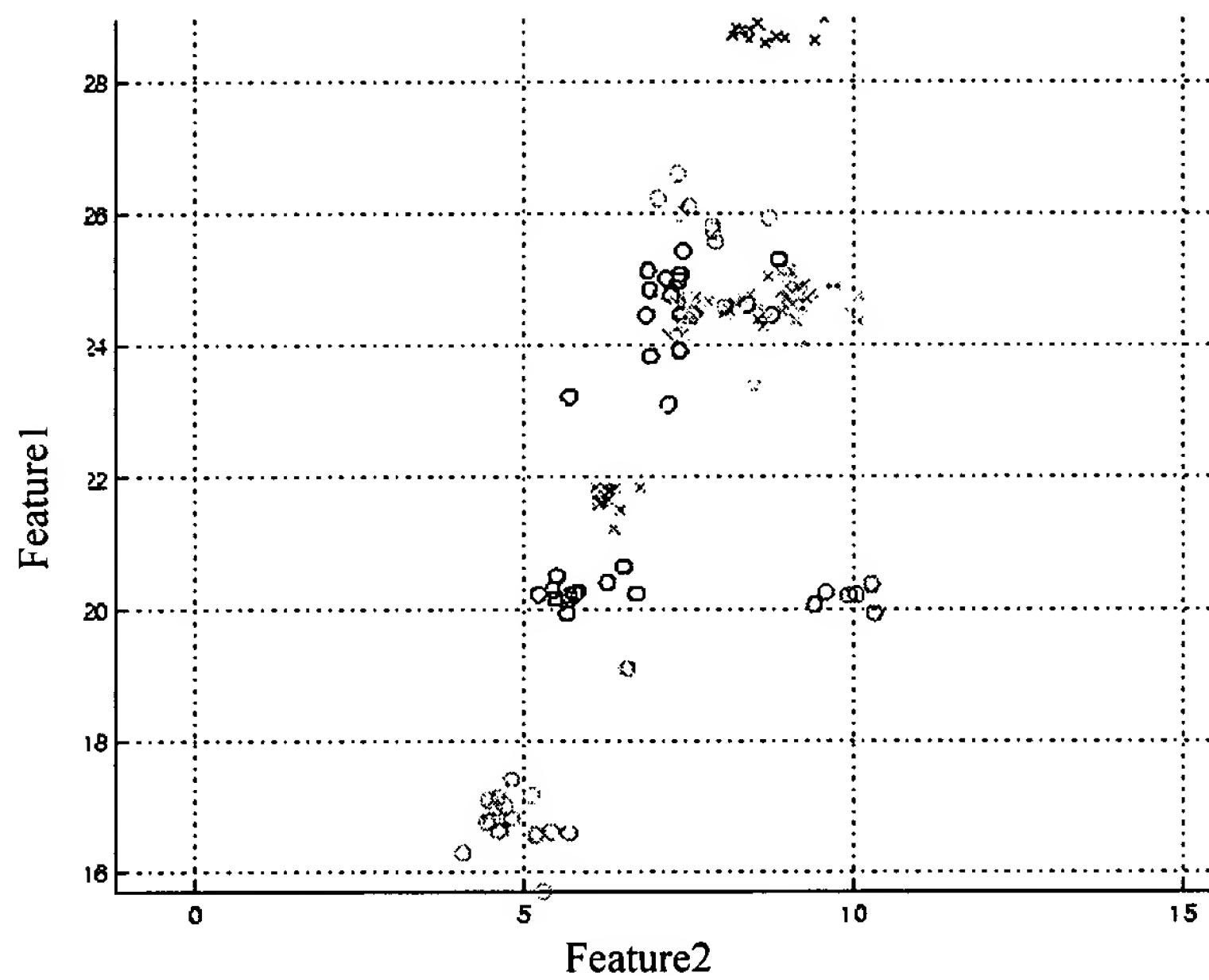
**Figure 16:** Feature1 and Feature2 clusters created by plotting the average of every valid value extracted as the object traversed the field of view.



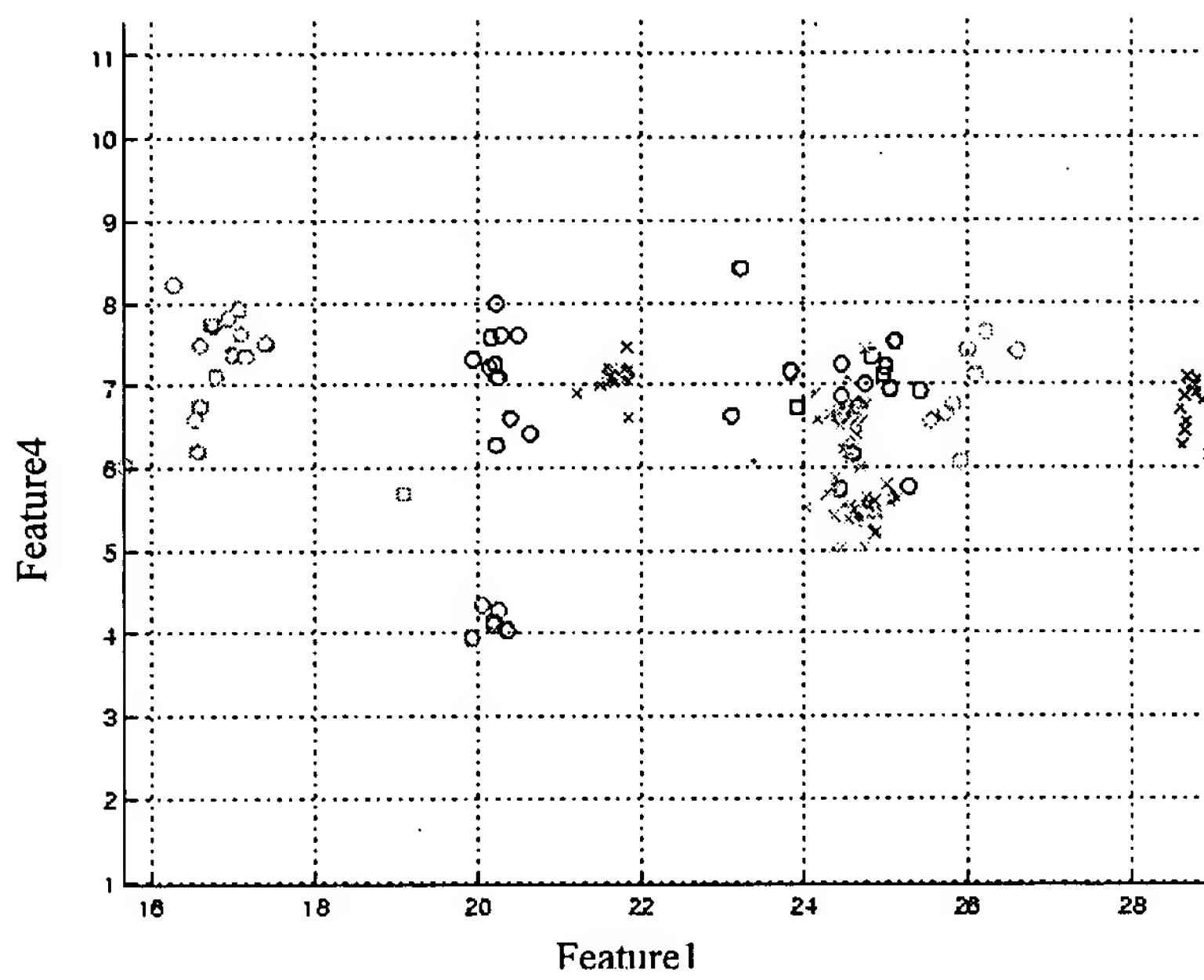
**Figure 17:** Feature3, Feature1, and Feature2 clusters created by plotting every valid value extracted from each frame.



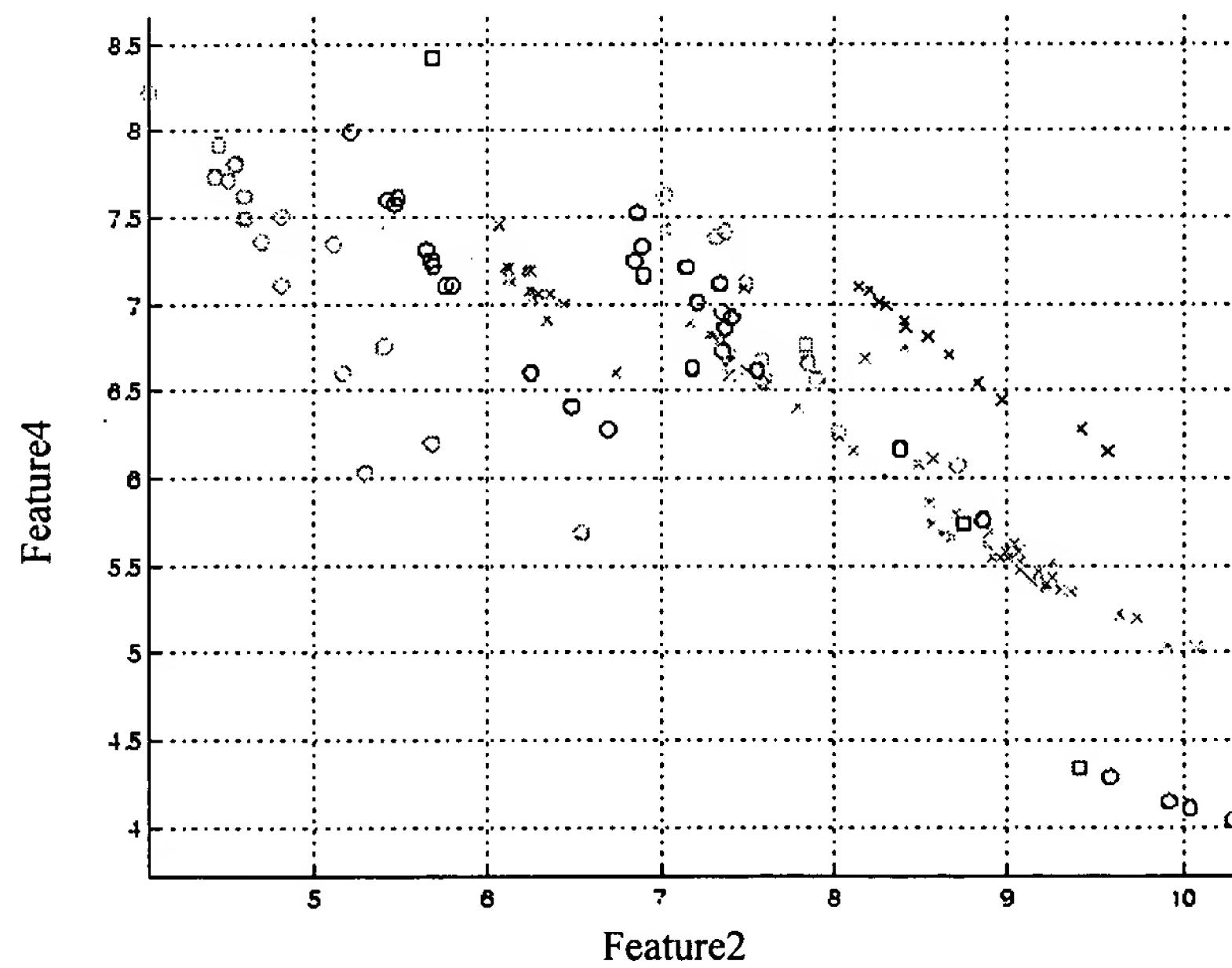
**Figure 18:** Feature3, Feature1, and Feature2 clusters created by plotting the average of every valid value extracted as the object traversed the field of view.



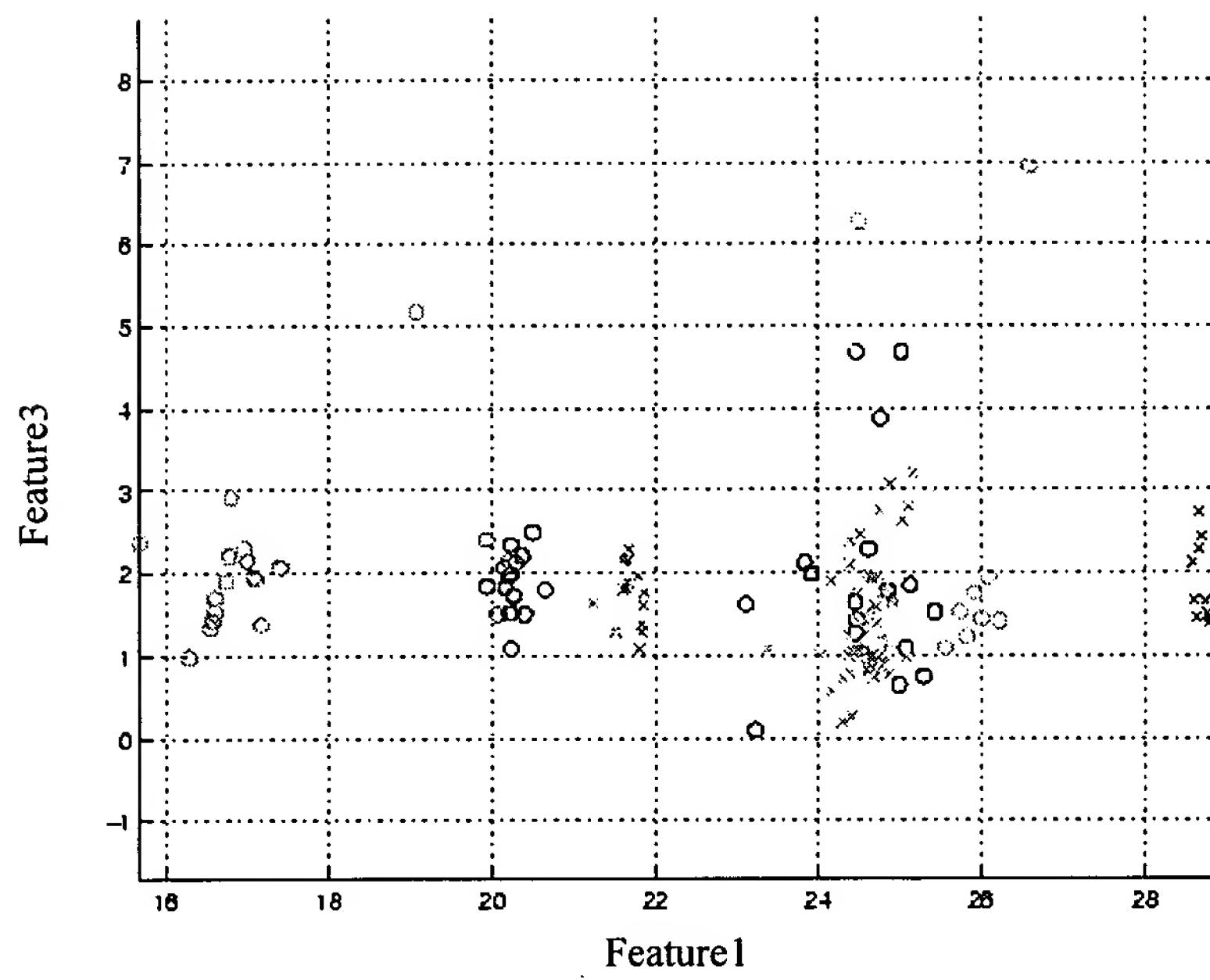
**Figure 19: Normalized clusters for Feature1 and Feature2 in combination.**



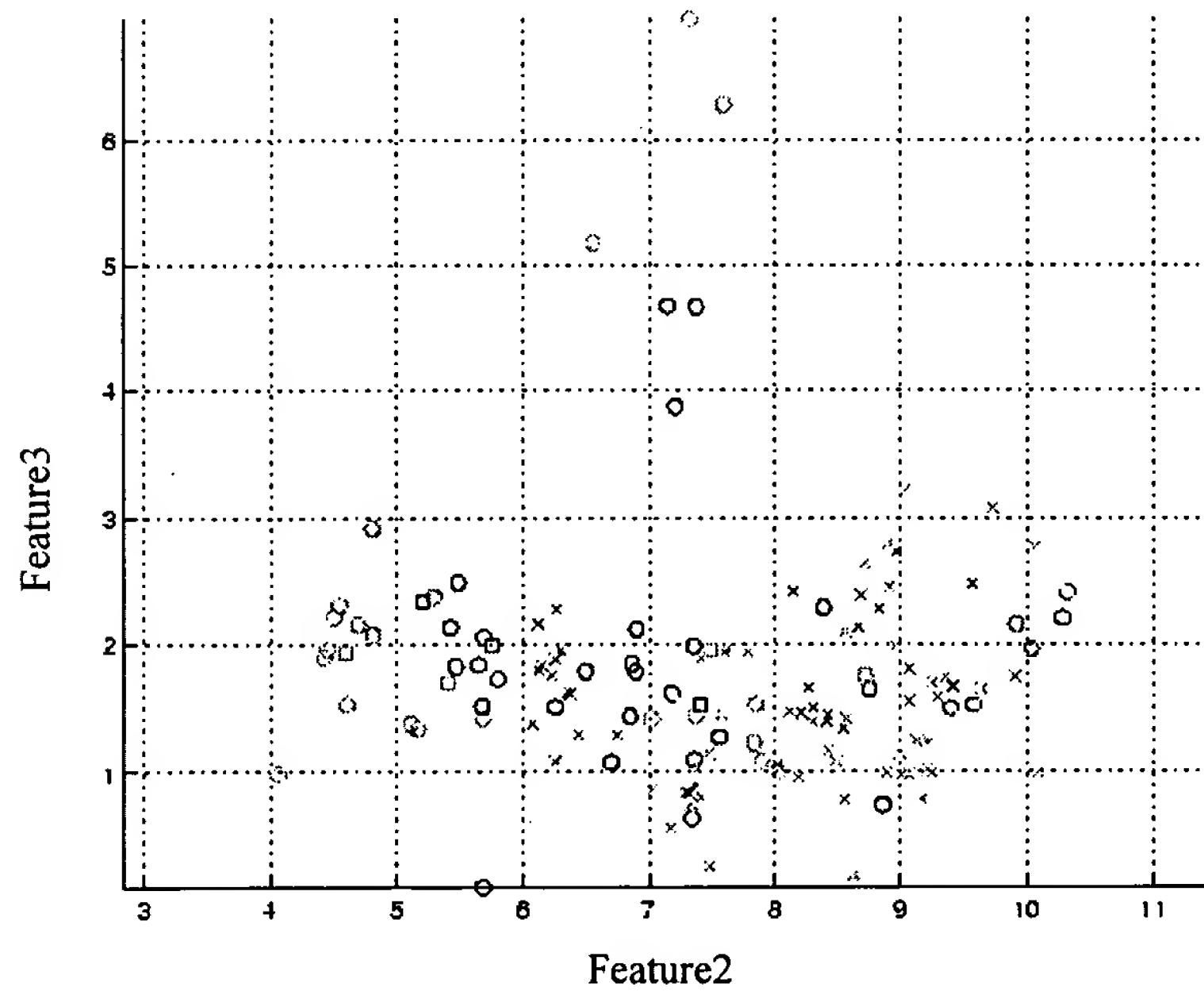
**Figure 20:** Normalized clusters for Feature4 and Feature1 in combination.



**Figure 21:** Normalized clusters for Feature4 and Feature2 in combination.



**Figure 22:** Normalized clusters plots for Feature3 and Feature1.



**Figure 23:** Normalized clusters for Feature3 and Feature2.

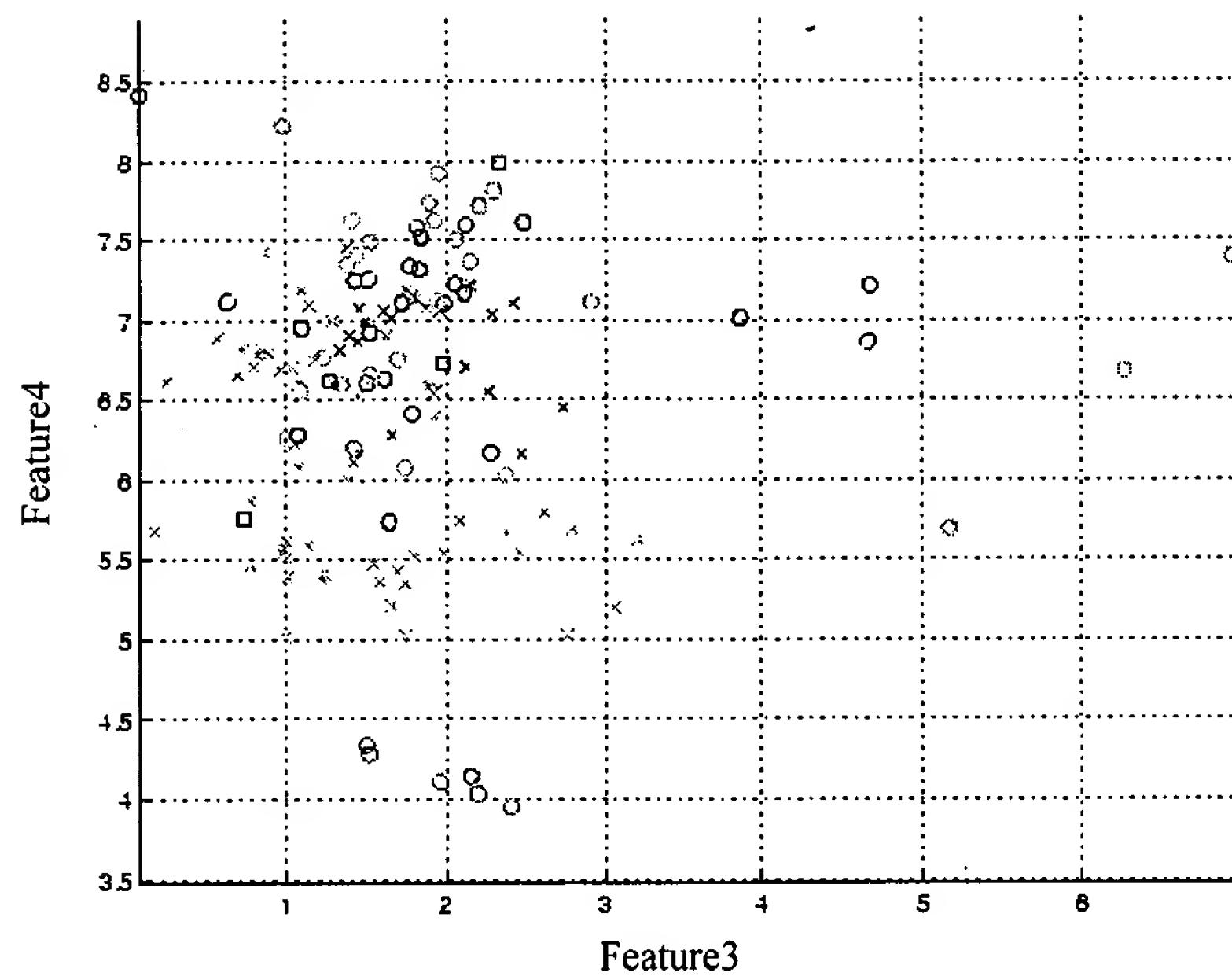


Figure 24: Normalized clusters for Feature4 and Feature3.

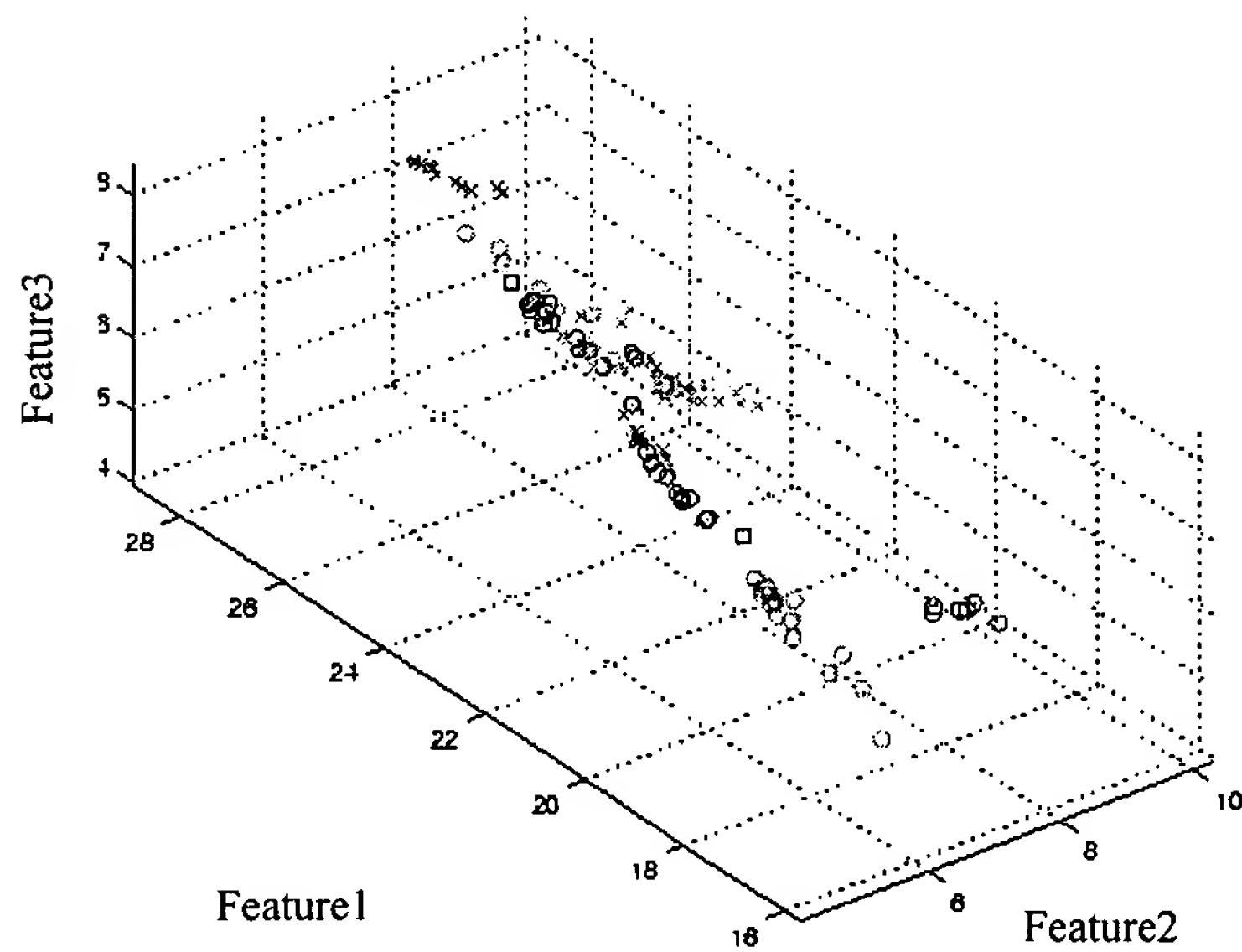
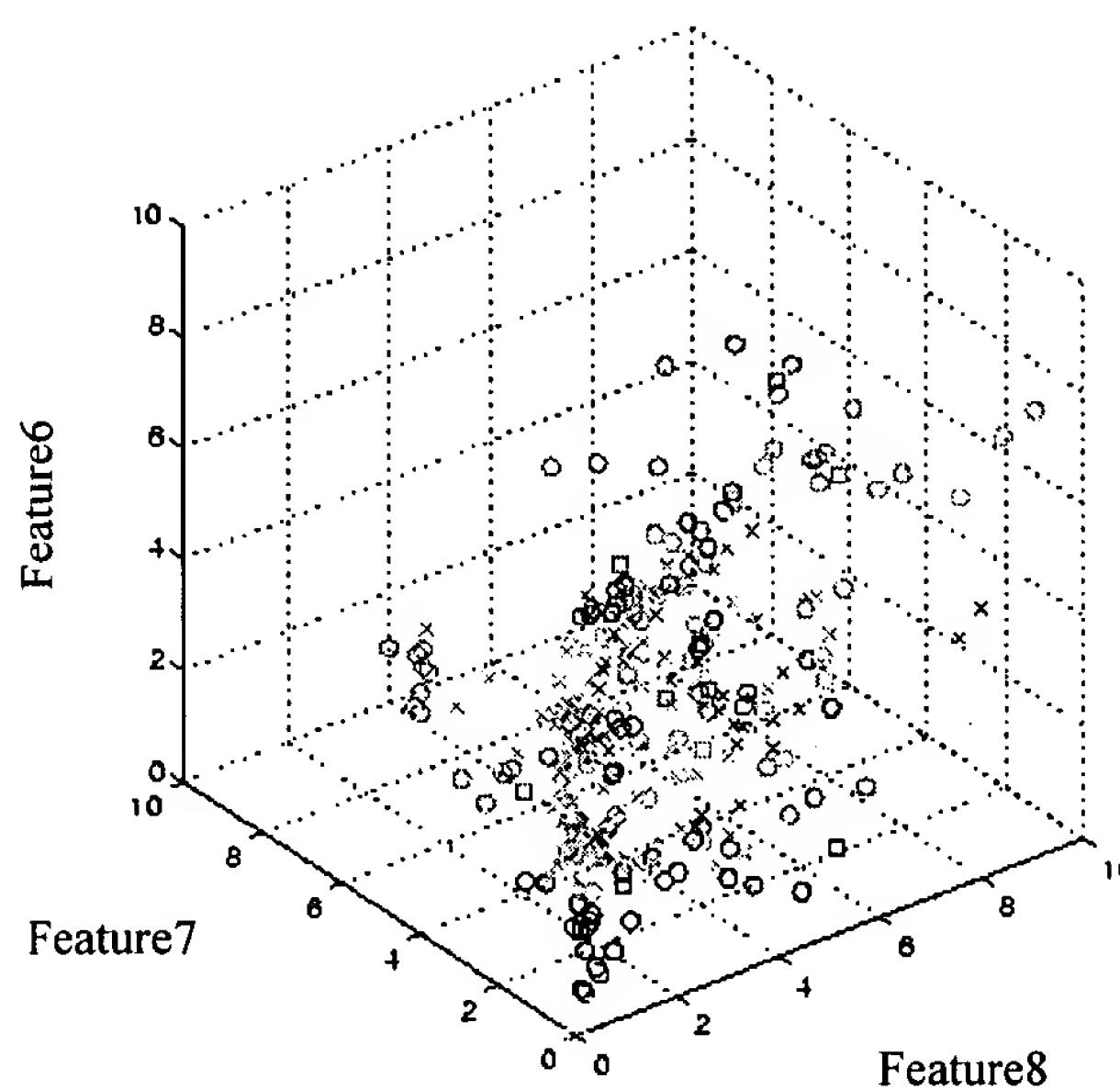
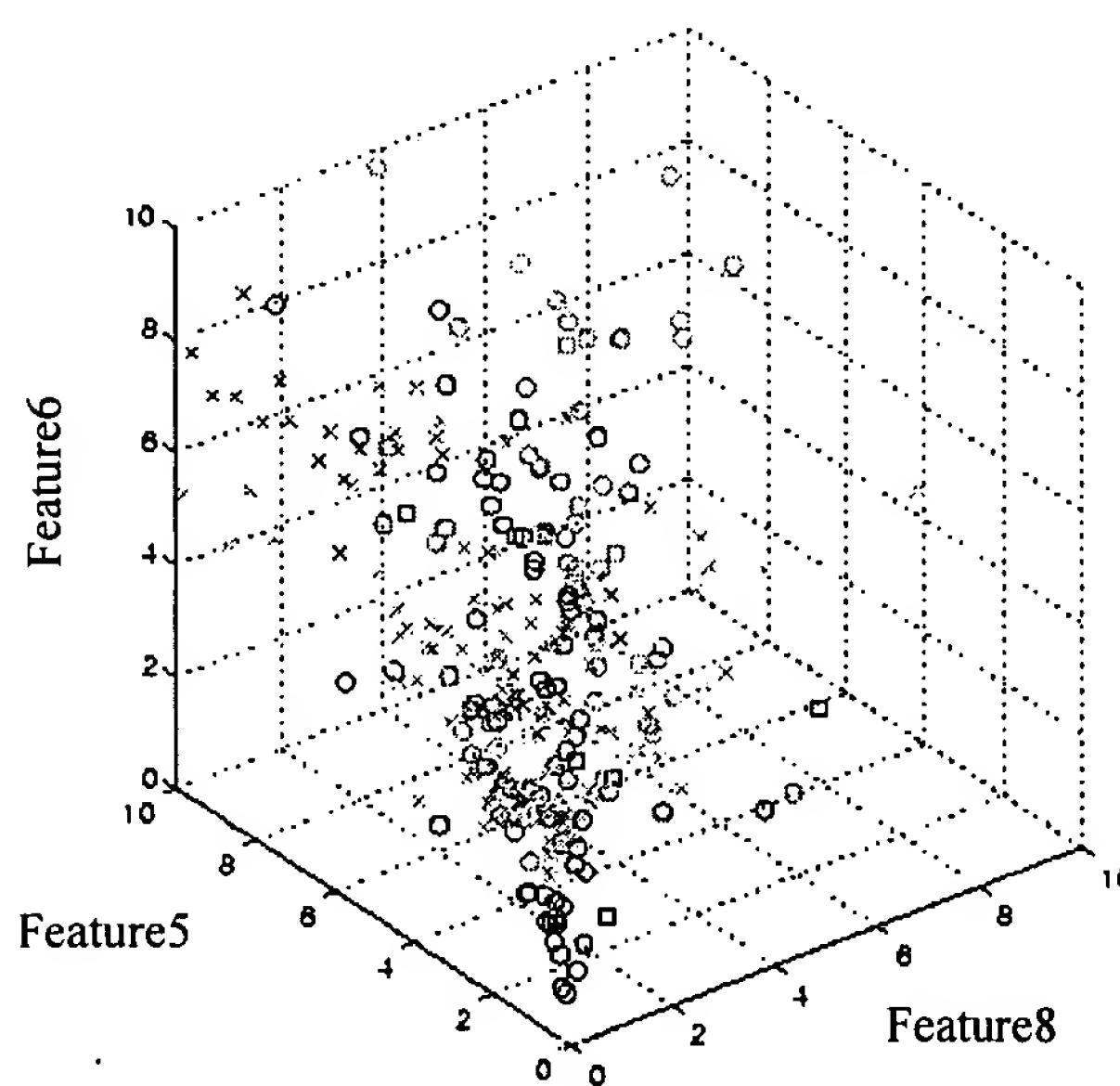


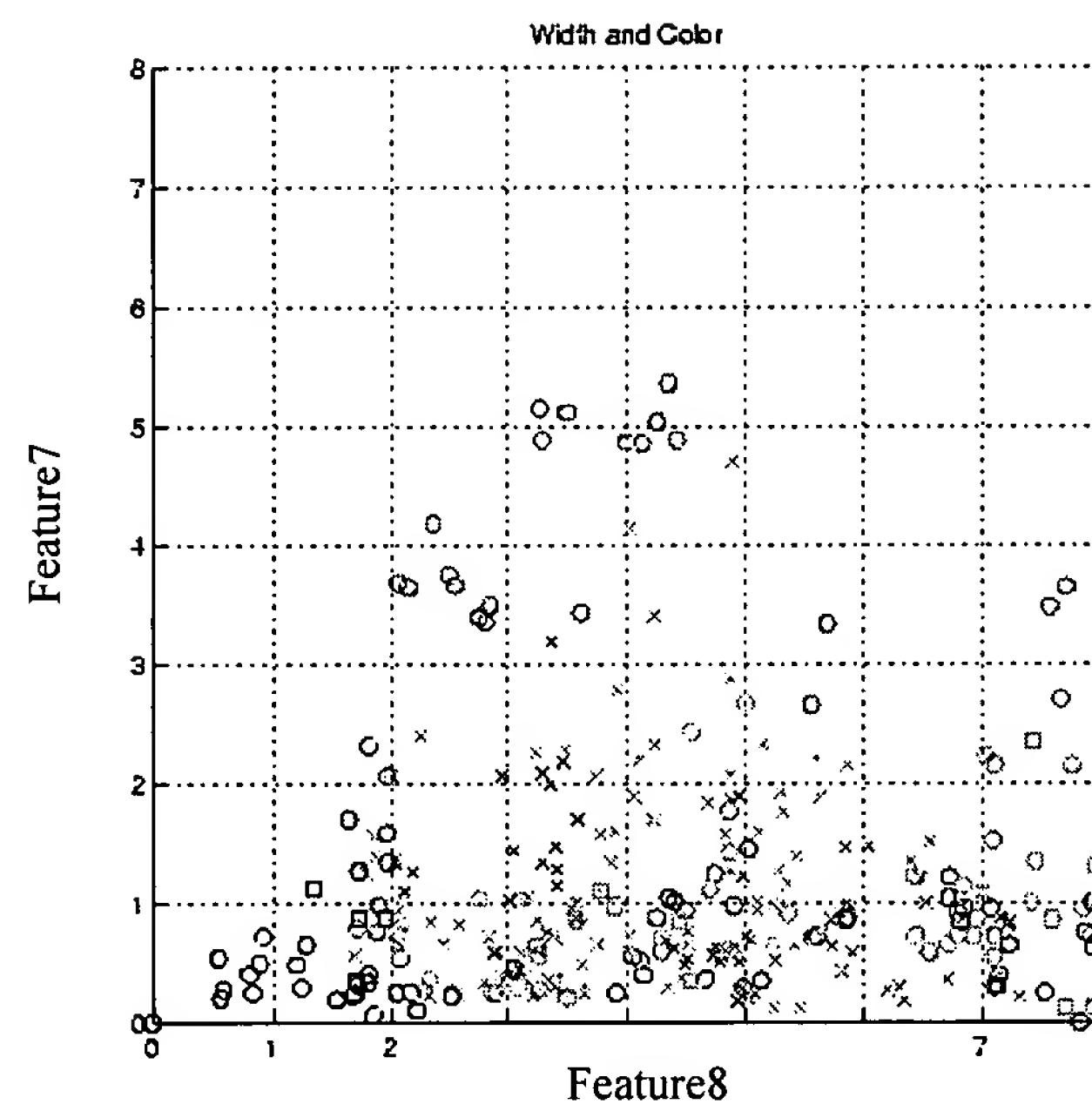
Figure 25: Normalized clusters for Feature4, Feature1, and Feature2.



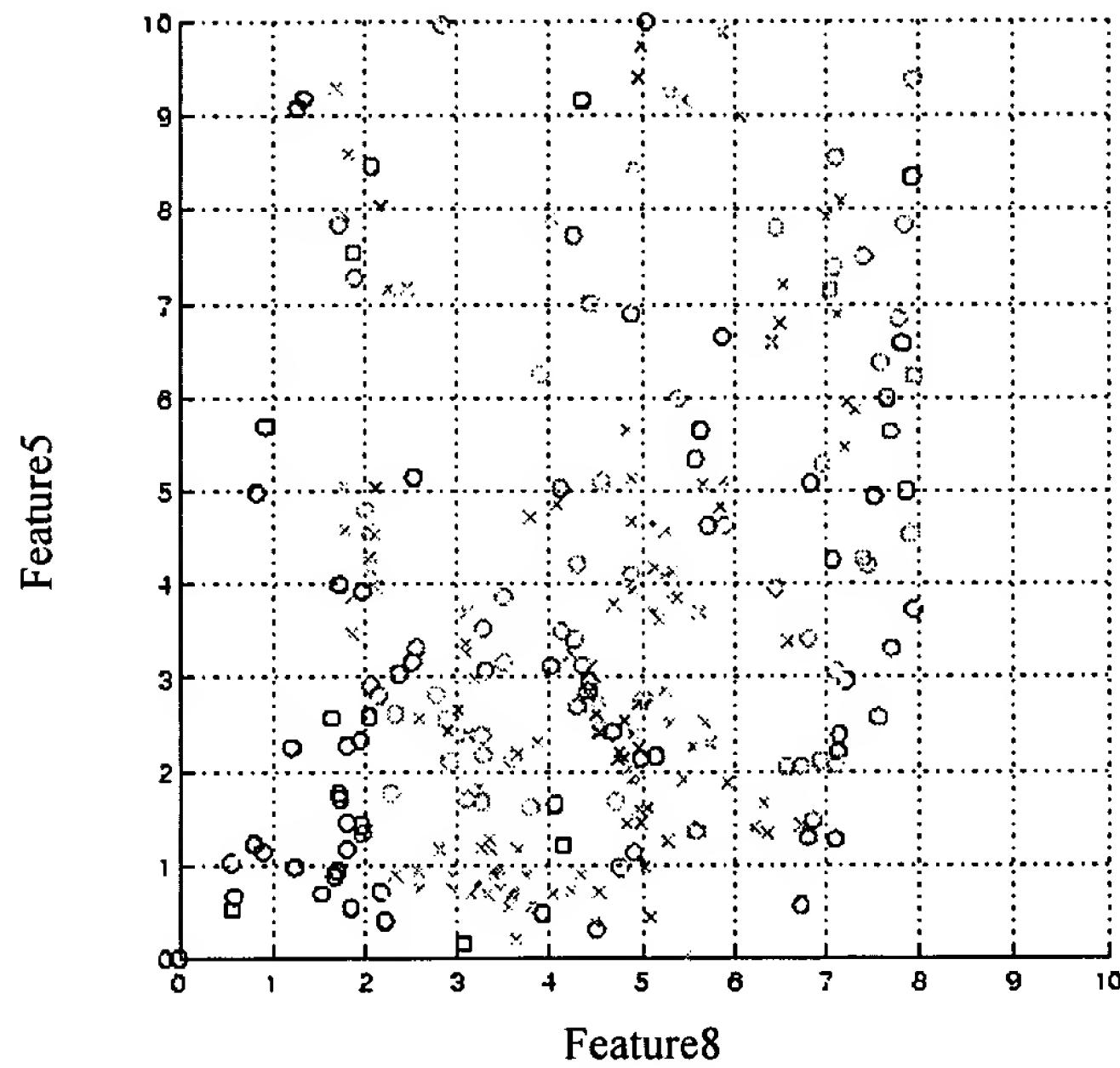
**Figure 26:** Distances from a given object using Feature6, Feature7, and Feature8.



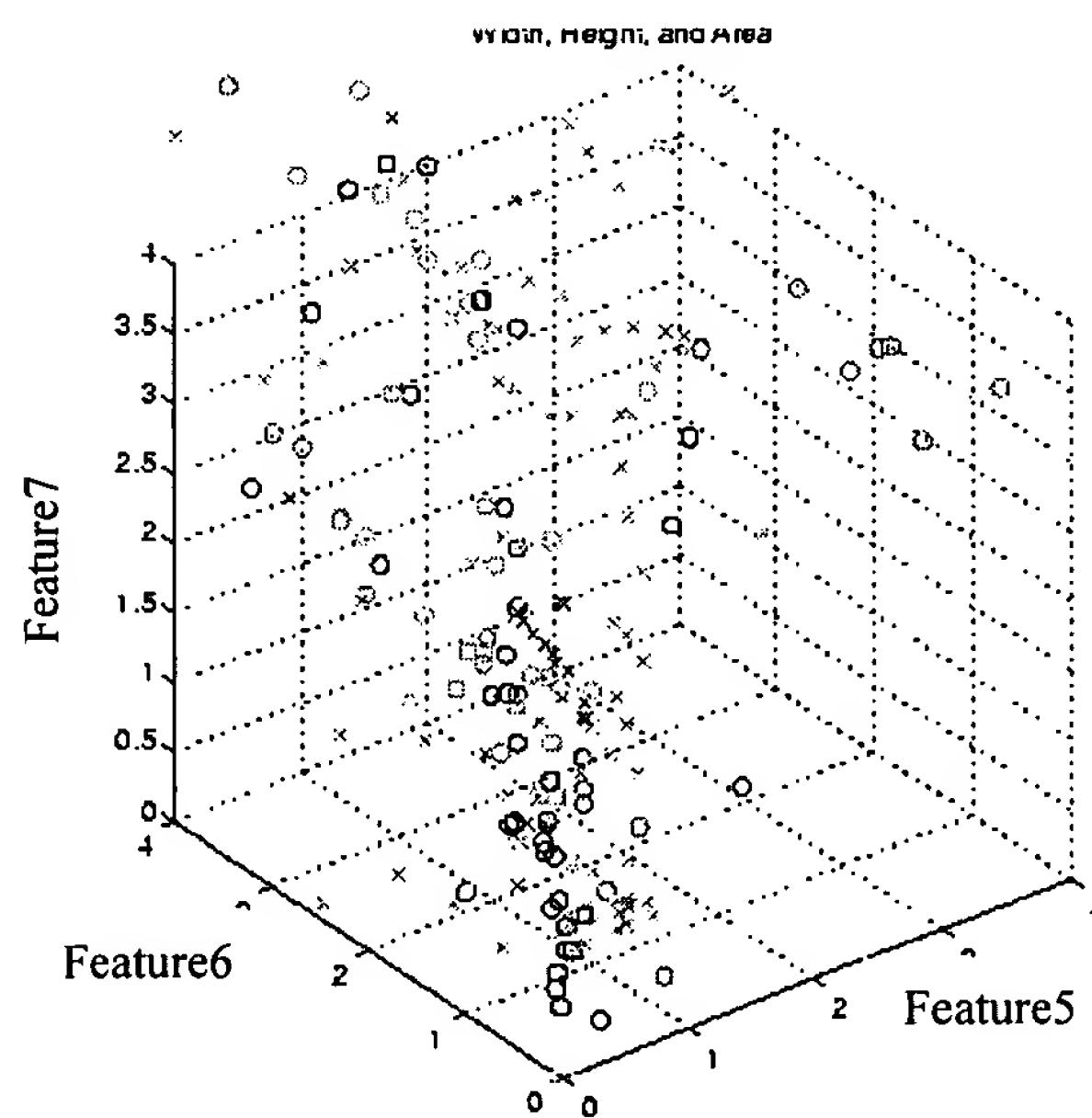
**Figure 27:** Distances from a given object using Feature6, Feature5, and Feature8.



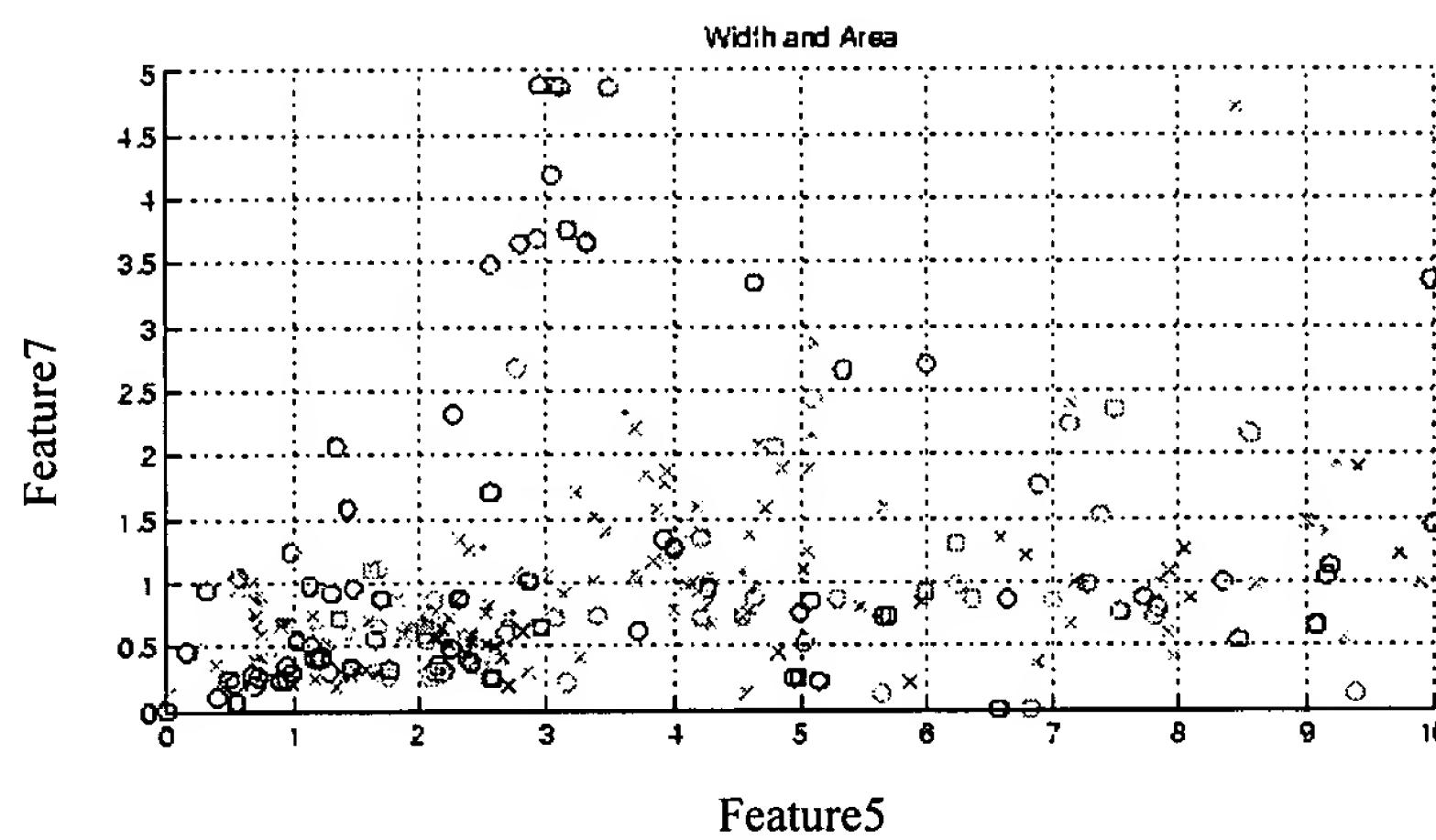
**Figure 28:** Distances from a given object using Feature7 and Feature8.



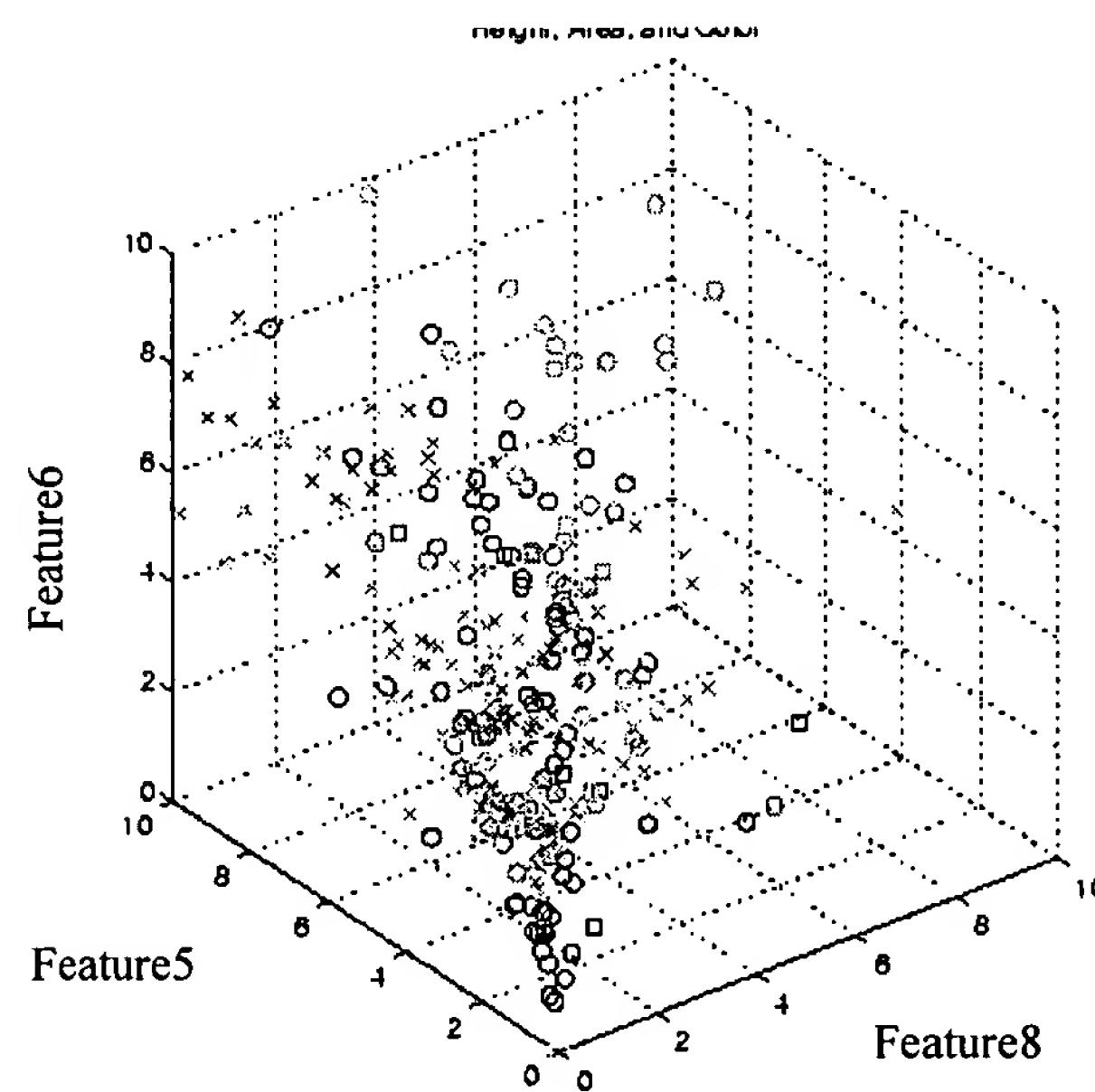
**Figure 29:** Distances from a given object using Feature5 and Feature8.



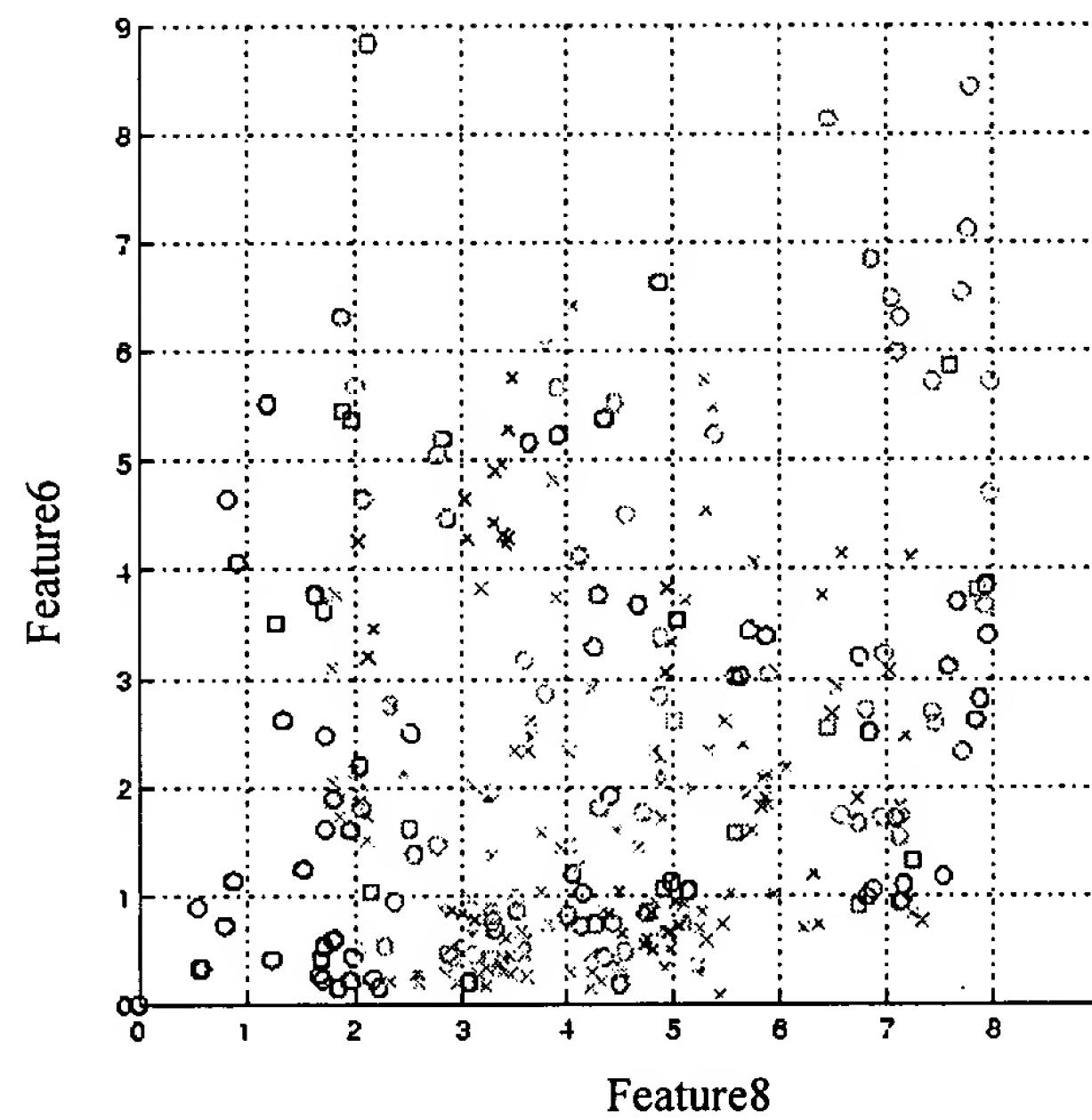
**Figure 30:** Distances from a given object using Feature7, Feature6, and Feature5..



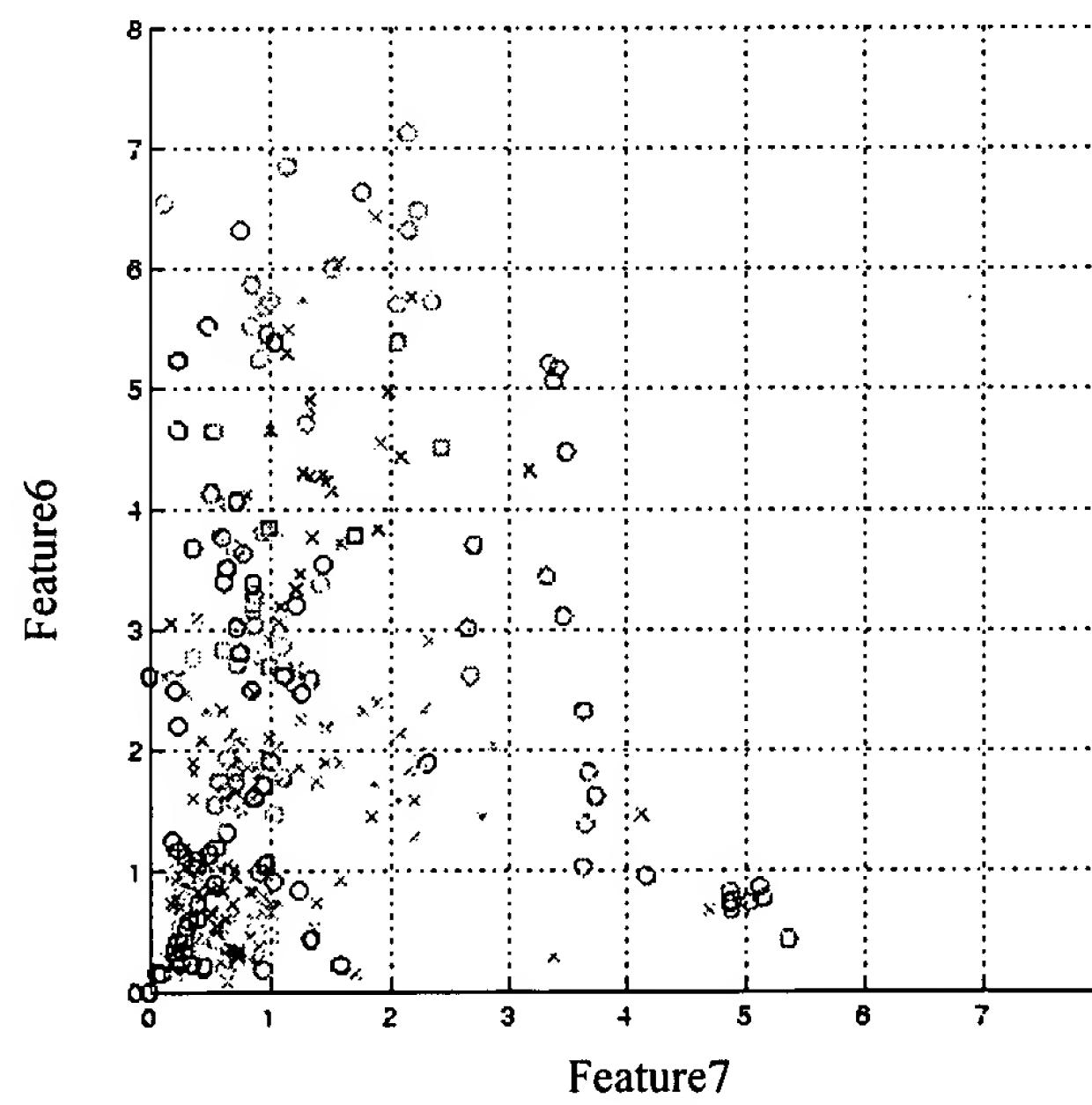
**Figure 31:** Distances from a given object using Feature6, Feature5, and Feature7.



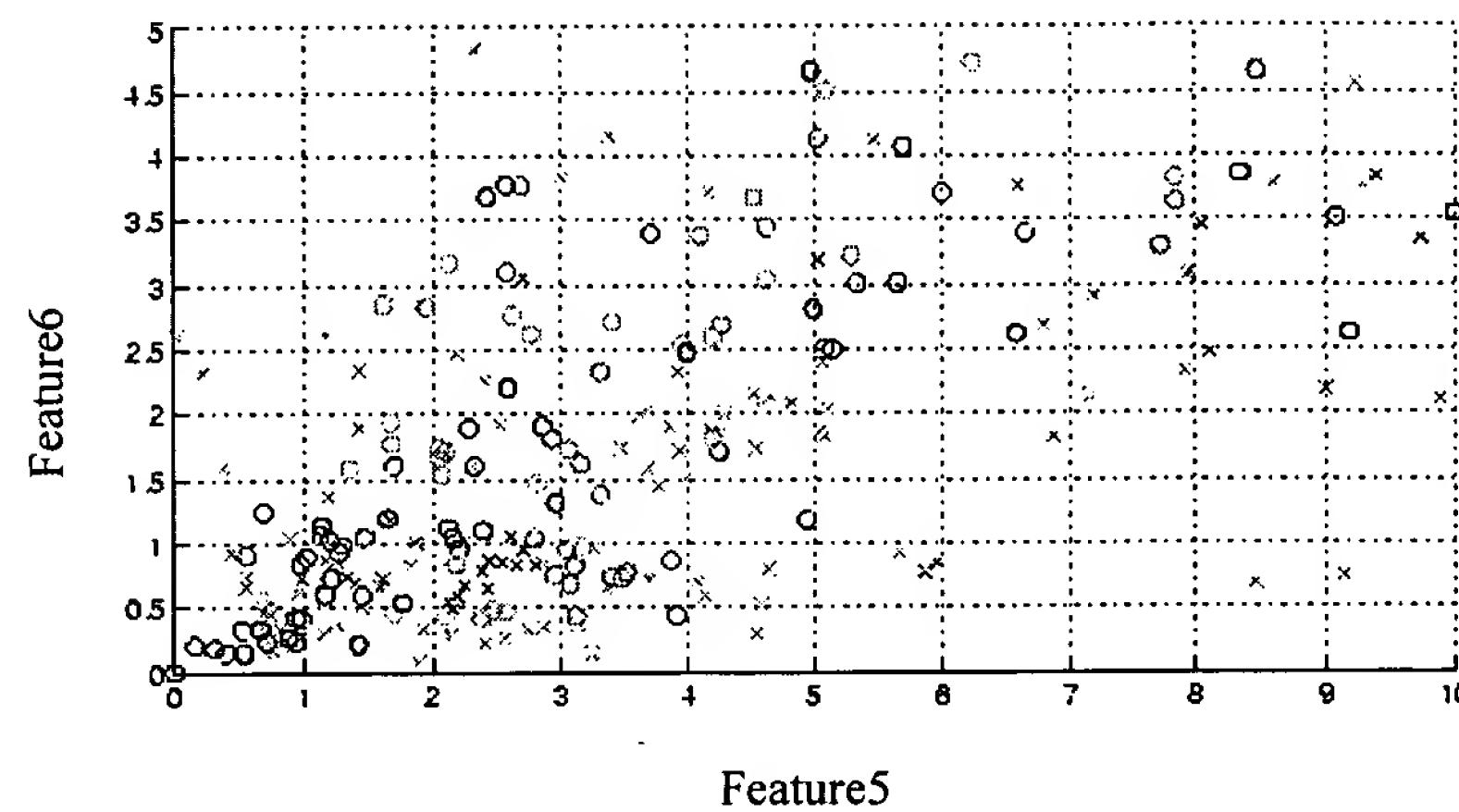
**Figure 32:** Distances from a given object using Feature6, Feature5, and Feature8.



**Figure 33:** Distances from a given object using Feature6 and Feature8.



**Figure 34:** Distances from a given object using Feature6 and Feature7.



**Figure 35: Distances from a given object using Feature6 and Feature5**